TOYOTA

TOYOTA MOTOR NORTH AMERICA, INC.

WASHINGTON OFFICE
1850 M STREET, NW, SUITE 600, WASHINGTON, DC 20036

TEL: (202) 775-1707
FAX: (202) 463-8513

2538211

NHTSA 2001-11041-7

September 18, 2001

The Honorable Jeffrey W. Runge, M.D., Administrator
National Highway Traffic Safety Administration
400 Seventh St, S.W.
Washington DC 20590

Re: Petition for Determination of Inconsequential Noncompliance to Federal Motor Vehicle Safety Standard 108 – *Lamps, Reflective Devices and Associated Equipment*, 2000-2001 MY Toyota Celica

Dear Dr. Runge:

Toyota Motor Corporation (TMC) has determined that certain 2000 –2001 MY Celicas are equipped with daytime running lamps (DRLs) which fail to meet the spacing requirements of Federal Motor Vehicles Safety Standard 108 – *Lamps, Reflective Devices and Associated Equipment.* Pursuant to the National Traffic and Motor Vehicle Safety Act, and on behalf of TMC, Toyota Motor North America, Inc. hereby petitions the National Highway Traffic Safety Administration (NHTSA) for a decision that the noncompliance is inconsequential as it relates to motor vehicle safety.

Toyota has already submitted a 49 CFR Part 573.5 noncompliance information report to the agency in accordance with the procedures outlined in Part 556 of the Federal Code of Regulations (see attached letter to the agency).

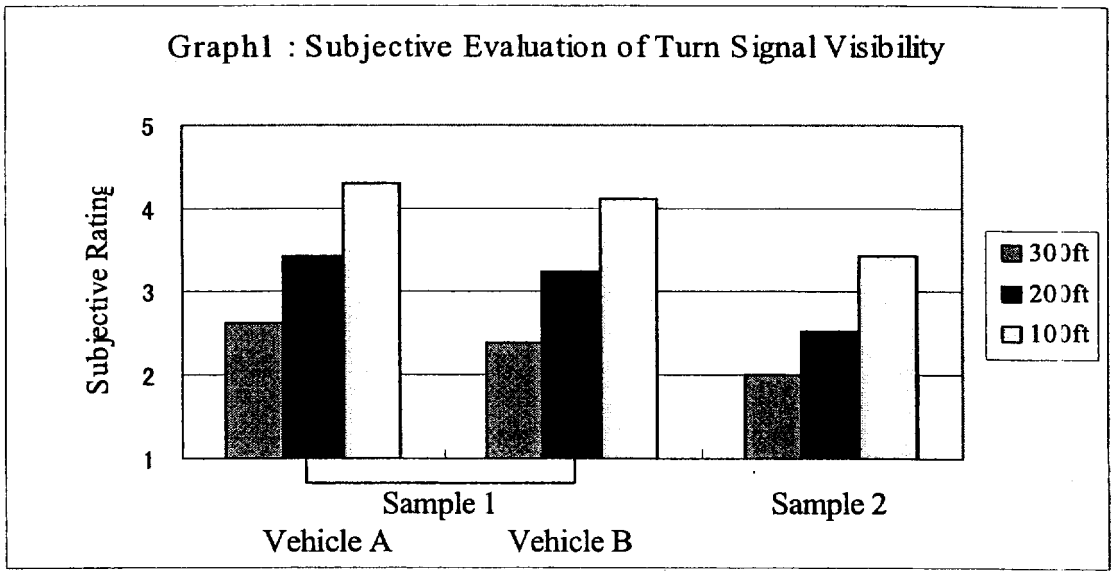
The DRLs on the Celica are provided by the high beam headlamps operating at a lower intensity, with each lamp having a maximum luminous intensity of roughly 5,880 candelas at test point H-V (as described in FMVSS 108 test procedures). S5.5.11(a)(4) of Standard 108 requires that "...if not optically combined with a turn signal lamp, (the DRL) is located so that the distance from its lighted edge to the optical center of the nearest turn signal lamp is not less than 100mm, unless... the luminous intensity of the DRL is not more than 2,600 candela at any location in the beam..." However, for the subject vehicle, the specification of the distance from the DRL's lighted edge to the optical center of the nearest turn signal lamp is 45.6 mm, and therefore, the DRLs exceed the maximum luminous intensity specified in section 5.5.11(a)(4)(i) of FMVSS 108.

Nonetheless, Toyota believes that this noncompliance is inconsequential to motor vehicle safety, and therefore creates no unreasonable risk to highway safety for the reasons outlined in the following:

4479

- S 5.5.11 (a) permits an upper beam headlamp intended to operate as a DRL to have a maximum intensity of 7000 cd, and in conjunction, a turn signal lamp with a minimum intensity of 200 cd, as long as the spacing is 100 mm or greater. Toyota conducted subjective evaluations of turn signal visibility using 20 contractors for the subject vehicles under various conditions, and confirmed that visibility for the subject vehicles is substantially better than vehicles that were modified to meet the minimum turn signal/maximum DRL luminous intensity permitted by the standard. According to Toyota's evaluation, the flashing of the subject turn signals can be readily discerned by a driver in an oncoming vehicle at a distance of 300 feet, and much more so than vehicles with modified signals/DRLs. The assessment distance of 300 feet is the same used in NHTSA's own evaluation of turn signal masking, as described in the final rule published in the Monday, January 11,1993 Federal Register (58 FR 3500)

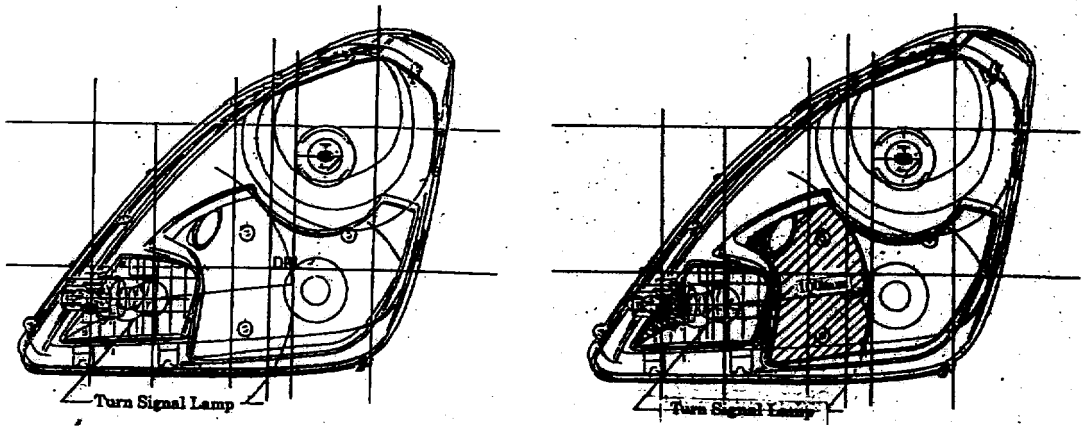
Results of Toyota's evaluation are summarized below, however further detail of the evaluation process and results can be found in the attached report.



Sample 1 - Original Celica Lamp (Two identical vehicles A and B were evaluated to confirm variation within same group of samples)

Sample 2 - Celica lamp modified to comply with min/max turn signal/headlamp requirements permitted by FMVSS108 with the following changes (see Figure 2)

a. high beam luminous intensity : 6900cd (Headlamp voltage increased)
b. distance from DRL's lighted edge to the optical center of turn signal lamp: 100mm (Masking added)
c. turn signal luminous intensity : 200cd (decreased voltage to turn signals & masking)



Sample 1 Sample 2

Figure 2: Lamp Assembly

In additon to the subjective measures, we also provide the following technical factors which contribute to good visibility of the turn signal lamps:

- The turn signal lighted area is 45.1 cm^2, two times larger than the 22 cm^2 required by FMVSS 108;

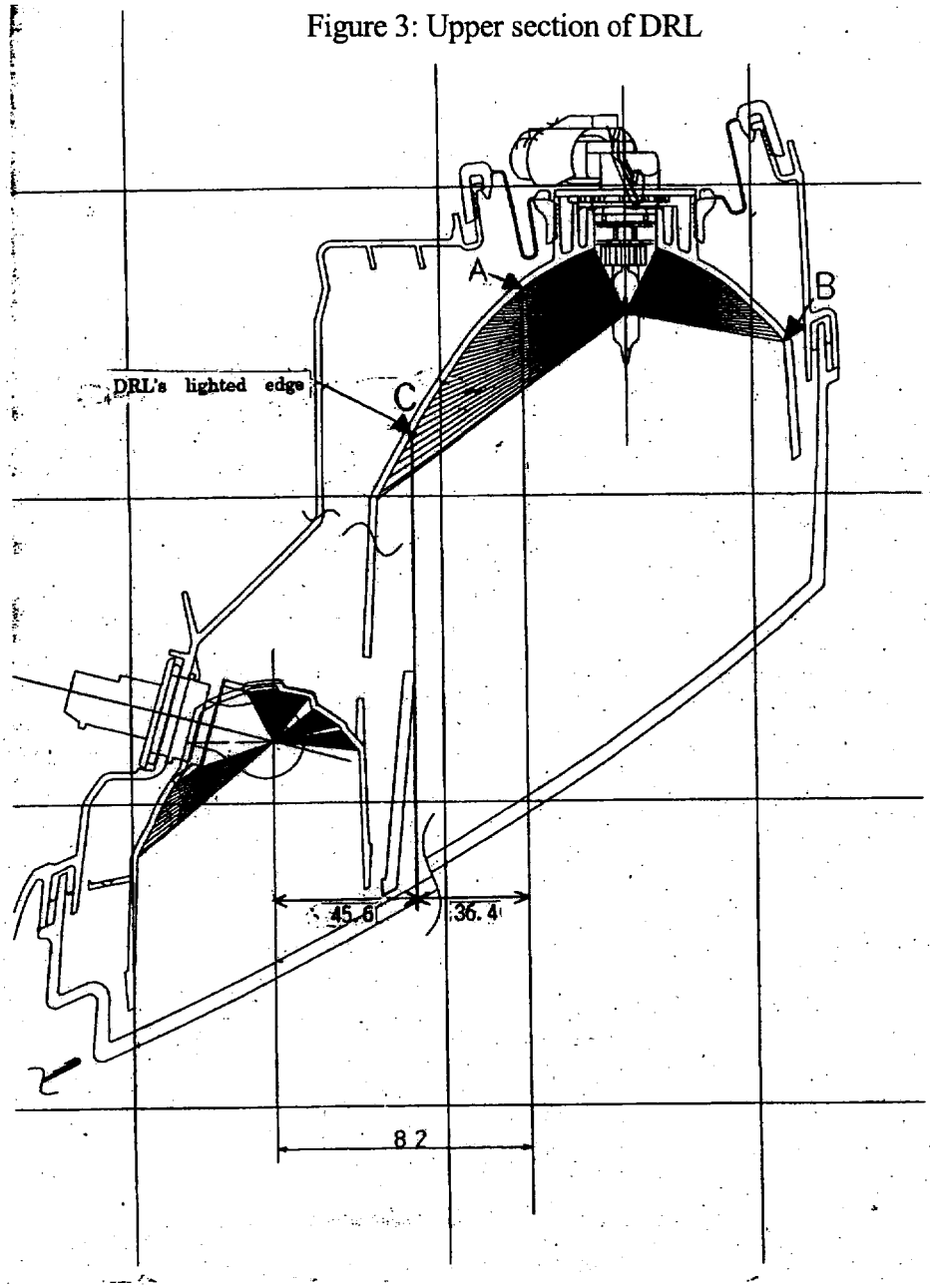
- The luminous intensity of the subject vehicle's turn signal lamps are 568 cd, or 2.8 times the minimum value of 200 cd;

- The substantial distance from the turn signal optical center (bulb filament axes) to the DRL's lighted edge is 82 mm, exceeding 80% of the requirements.
  In this case, the "substantial" distance refers to the distance from the turn signal's optical center to the actual lighted edge "A" (as given by Figure 3 below), although the theoretical lighted edge is point "C" (45.6 mm). In Figure 3, the lighted range from A to C of the reflector emits only light which is parallel to the axis of the DRL, which can only be seen by drivers in oncoming vehicles that are looking along the optical axis of the DRL. However, as one moves off center, this light is no longer visible. Therefore the perceptible DRL's lighted area, except for the unique case where the eye-point is on the optical axis of the DRL, is actually from A to B (as given in Figure 3).

- The subject vehicles meet all of the requirements of CMVSS 108 and the identical DRL requirements which are found in FMVSS 108 prior to October 1, 1995;

- Finally, although Toyota has sold approximately 100,000 of the subject vehicles since the summer of 1999 in the USA and Canada, it has not received any customer complaints nor accident reports that alleged problems with turn signal visibility or masking.

Figure 3: Upper section of DRL



In conclusion, Toyota believes that the noncompliance in the subject vehicles is inconsequential to motor vehicle safety for the reasons outlined above, and therefore Toyota should be exempted from the notification and remedy requirements of the Safety Act for this specific noncompliance. If you have any questions concerning this matter, please do not hesitate to call Mitch Kato of our staff at (202) 775-1707.

Sincerely,

Chris Tinto, Director
Technical and Regulatory Affairs

TOYOTA

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WASHINGTON OFFICE
1850 M STREET, NW, SUITE 600, WASHINGTON, DC 20036

TEL: (202) 775-1707
FAX: (202) 463-8513

August 24, 2001

Mr. Kenneth N. Weinstein
Associate Administrator for Safety Assurance – NSA-01
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Re: Toyota Celica Daytime Running Lamp
Part 573, Noncompliance Information Report

Dear Mr. Weinstein:

In accordance with the requirements of the National Traffic and Motor Vehicle Safety Act of 1966 and 49 CFR Part 573, on behalf of Toyota Motor Corporation ["TMC"], we hereby submit a Noncompliance Information Report concerning the luminous intensity of the Daytime Running Lamp ["DRL"] of certain 2000 and 2001 model year Toyota Celica vehicles. In accordance with 49 CFR Part 556, Toyota plans to petition NHTSA for exemption from the notification and remedy requirements of the Act due to the inconsequentiality of the noncompliance.

Should you have any questions about this report, please contact Mr. Michiteru Kato at (202) 775-1707.

Sincerely,

TOYOTA MOTOR NORTH AMERICA, INC.

Chris Tinto
Director

CT:mk
Attachment

NONCOMPLIANCE INFORMATION REPORT

1. Vehicle Manufacture Name:

   Toyota Motor Corporation ["TMC"]
   1,Toyota-cho, Toyota-city
   Aichi-ken, 471-8571 Japan

   Affiliated U.S. Sales Company:
   Toyota Motor Sales, USA, Inc.["TMS"]
   19001 South Western Avenue
   Torrance, CA 90509

2. Identification of Affected Vehicles:

   Based on production records, we have determined the affected vehicle population as set forth in the table below.

Make Car Line	Model Year	Manufacturer	VIN		Production Period
			VDS	VIS	
Toyota Celica	2000 -2001	TMC	DR32T	0001014 - 0107745	May 7, 1999 - June 18, 2001
			DR38T	0001004 - 0106083	
			DY32T	0001075 - 0050501	
			DY38T	0001005 - 0050509	

Note : *Although the involved vehicles are within the above VIN ranges, not all vehicles in these ranges were sold in the U.S.

3. Total Number of Vehicles Potentially Affected:

   92,794

4. Percentage of Vehicles Estimated to Actually Contain Noncompliance:

   100%

5. Description of Noncompliance:

The luminous intensity of the Daytime Running Lamp ["DRL"] in the subject vehicle is 5,880 candela at test point H-V, and the distance from its lighted edge to the optical center of the nearest turn signal lamp is 45.6 mm. This specification does not meet the requirement outlined in S5.5.11(a)(4) of FMVSS108.

6. Chronology:

Not applicable

7. Basis of Noncompliance:

S5.5.11(a)(4) requires that "...if not optically combined with a turn signal lamp, [DRL] is located so that the distance from its lighted edge to the optical center of the nearest turn signal lamp is not less than 100mm, unless the luminous intensity of the DRL is not more than 2,600 candela at any location in the beam." However, the specification of the DRL for the subject vehicles does not meet the requirement as described in the table below.

	Requirement	Specification of DRL for the subject vehicles	Reference data
1	The luminous intensity of the DRL of subject vehicle	5,880 candela	Attachment 1
2	The distance from its lighted edge to the optical center of the nearest turn signal lamp	45.6 mm	Attachment 2,3

8. Description of Corrective Repair Action:

Toyota believes that, although this specification of the DRL constitutes a technical noncompliance, it is inconsequential as it relates to motor vehicle safety and, therefore, it plans to petition for exemption from the notification and remedy requirements of the Act.

[Daytime Running Light]
デイタイムランニングライト

029 S020

全59ページ中 7ページ

1999/06/03 作成

承認	検討	作成
澤原	六川	大村

[Customer] 得意先名 : トヨタ [Toyota]

[Model] 型式:品名 : 770T コンビネーションヘッドランプ

[Part#] 品 番 : 10000-76967 10100-76967

[Distribution] 向 先 : 北米 [North America]

[ID] 指示No : 03-2.10416

[Step] ステップ : 認証 1) [Certification]

[Standard] 適用規格 : 個別製品規格
[Individual product Standard]

[Measured Distance] 測定距離 : 60 : t

[Measurement Unit] 単 位 : cd

25

試験方法 [Test Procedure]

[1]機械軸0－0にセットした回転台上にランプを取り付けたテストスタンドをセットする。
[Set the test stand equipped with lamp on the turntable adjusted to 0-0 axis.]
[2] AJスクリュにより正規エイミングする。
[Aim the lamp by using AJ screw.]
[3] Hiビーム（4灯式はタイプI）を6．4Vにて点灯する。
[Turn on the High Beam Lamp at 6.4 voltages.]
[4] H－Vの光度値を測定する。
[Measure the luminous intensity at H-V point.]

試験結果 [Test Result]

(H－V) [Measured Point]

	測定点	測定値	
[Measured Point]		No 1	
[Luminous Intensity]	光度値	5880cd	———cd
[Standard]	規格	2000～7000cd	

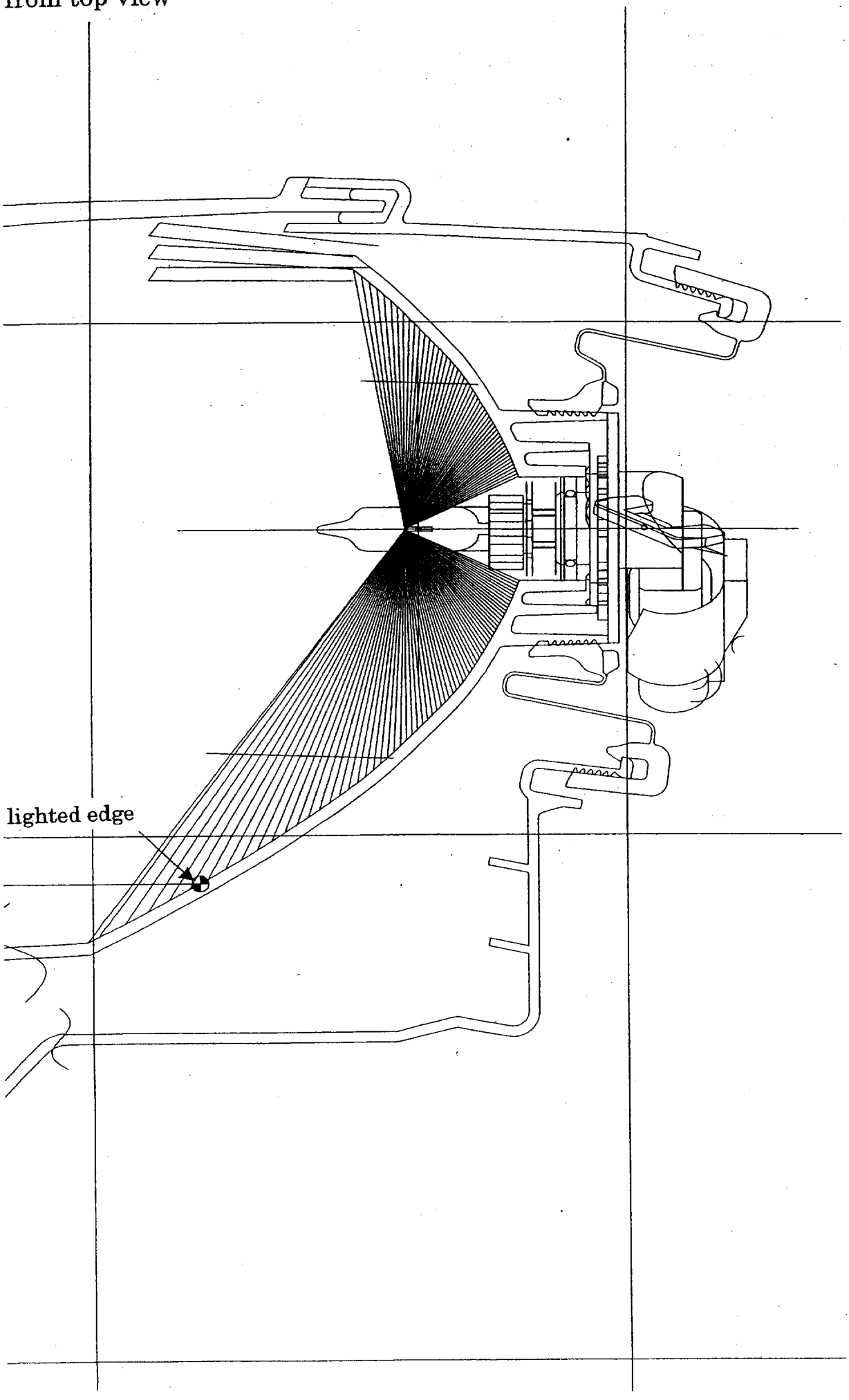
判 定： 合 格

[Conclusion: Pass]

Figure 2 : cross sec

from top view

Attachment3



TMDD0000 1198516 &1198516-02 01/08/02 21:43:07 X 371Y 296 SCL1.00

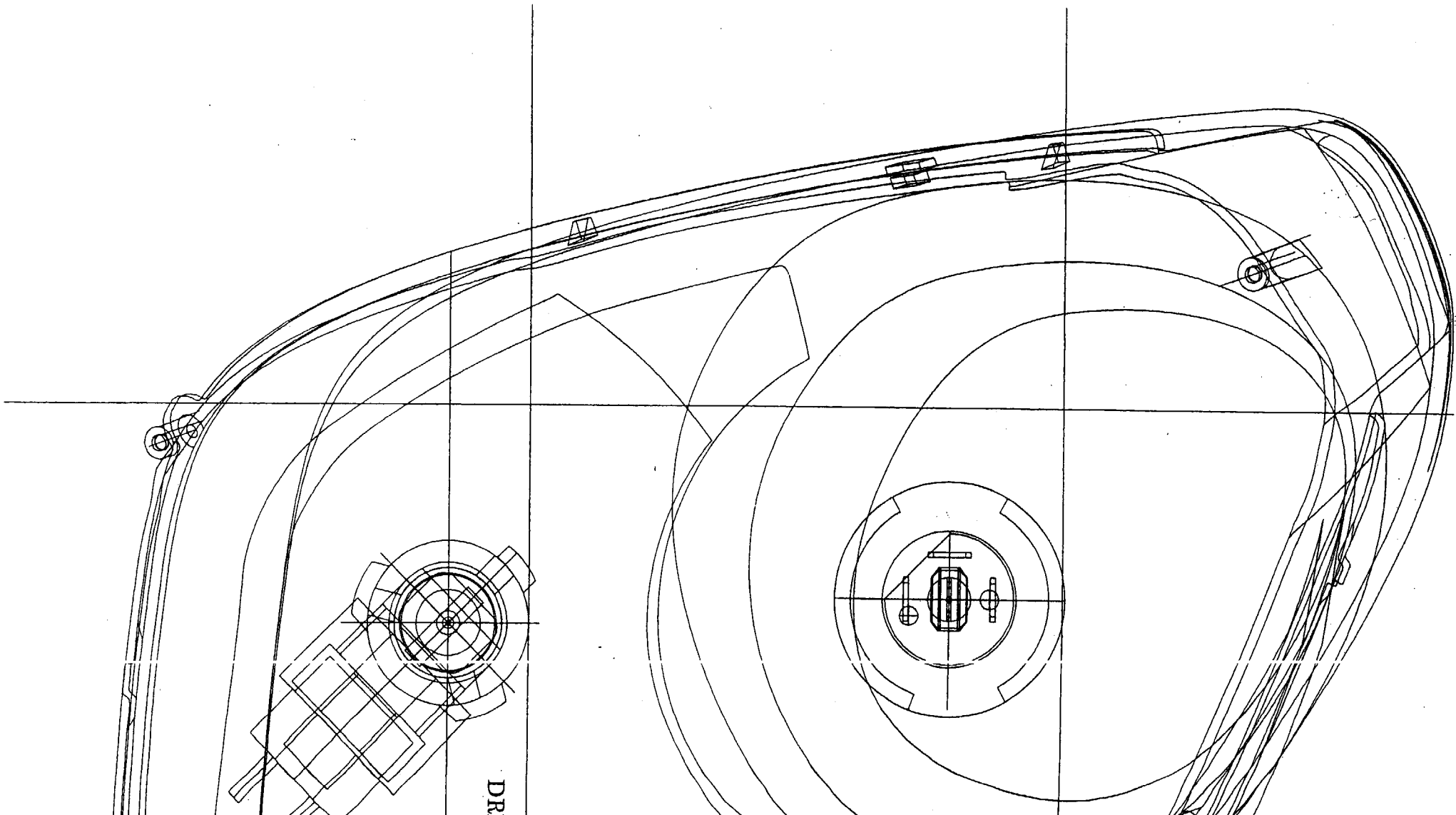
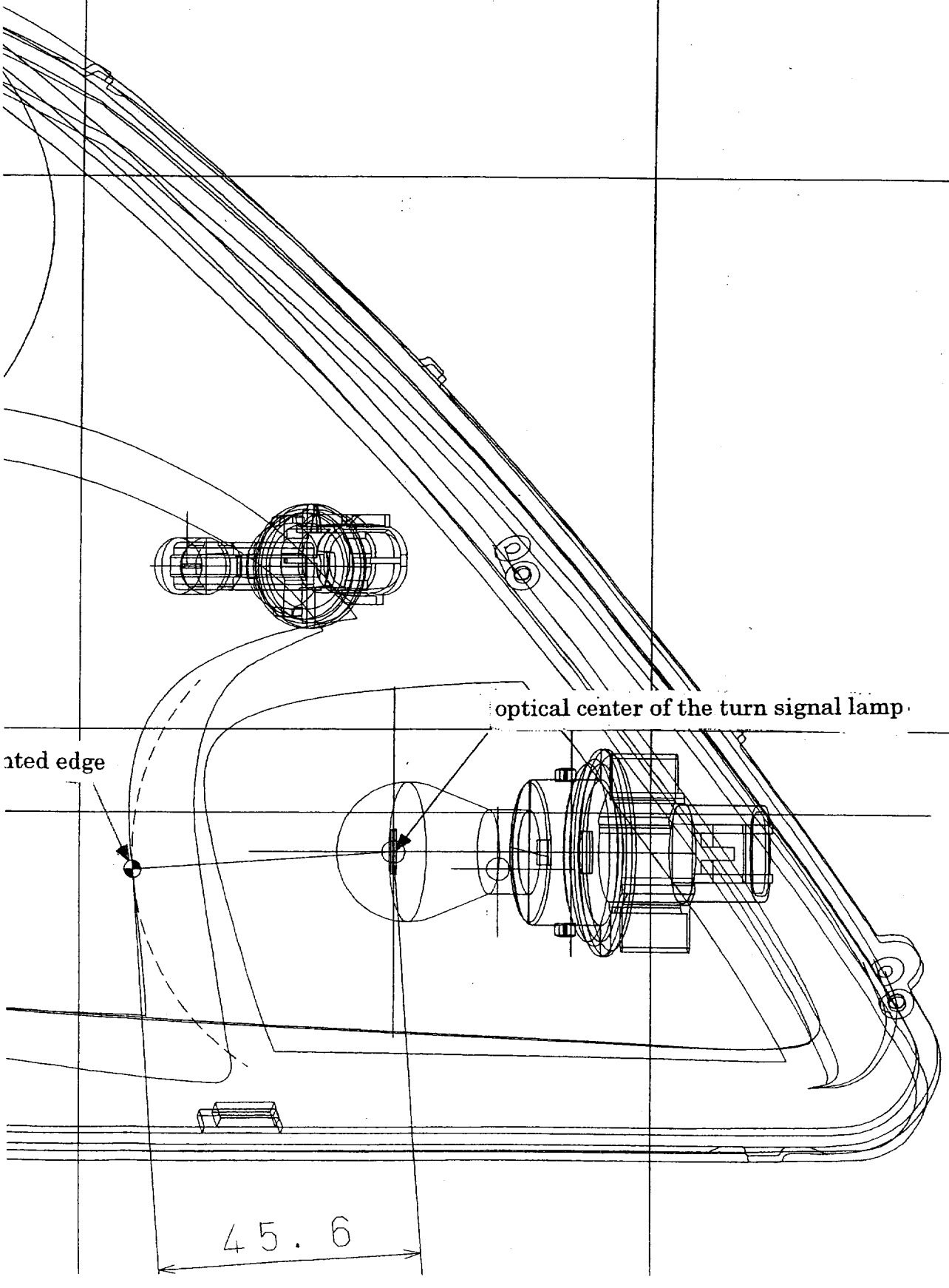


Figure 1 : front view



Executive Summary of Celica DRL Subjective Evaluation

Objective

Evaluation of the visibility of the turn signal lamp while DRL of 00MY and 01MY Celica is illuminated.

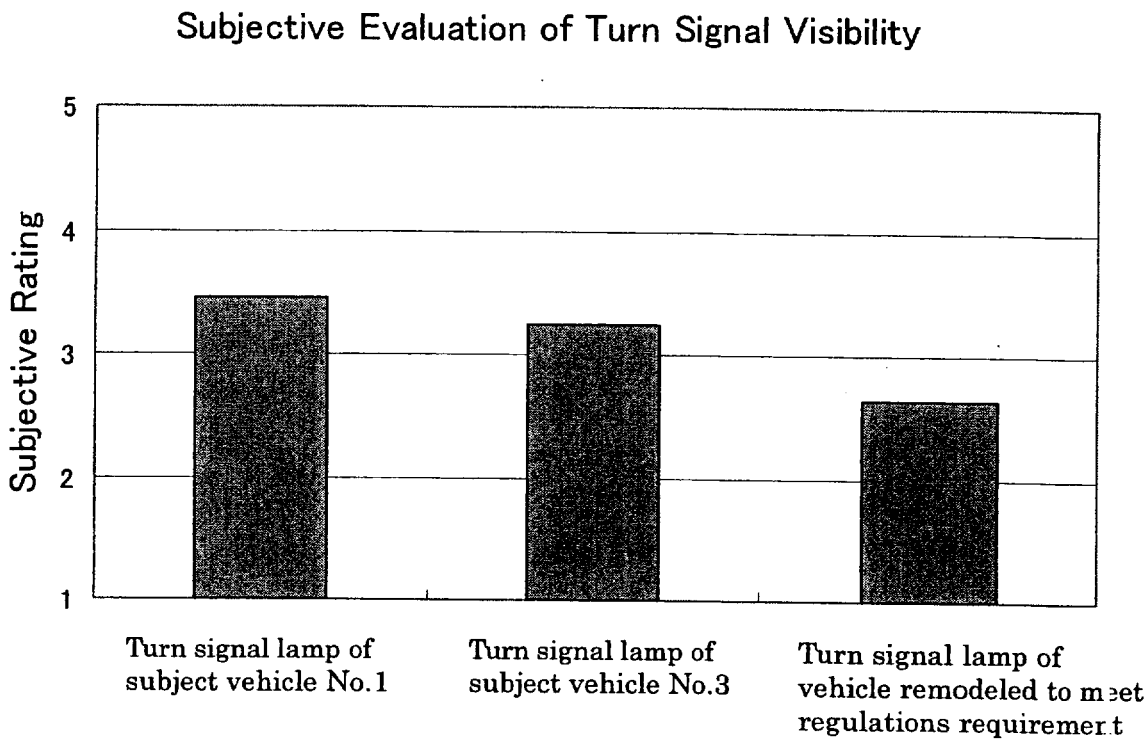
Evaluation Method

Evaluation of the visibility was done in consideration of the influence of the observation distance and the direction of the sun position as follows.

- Test date; From August 6 To August 9, 2001
- The evaluation site was located two places at Toyota Arizona Proving Ground.
- Four observation vehicles were prepared.
- Twenty observers who were not involved in the lamp business were chosen.
- Observers were chosen among the resident around Phoenix in Arizona, and half of them were 45 years old or older.
- The evaluation vehicles were two subject vehicles (vehicle No.1 and No.3) and one vehicle remodeled to meet regulation requirement, and following two kinds of lamps were evaluated.
    1. Original turn signal lamps and DRLs
    2. The combination Lamp of which distance from center of turn signal lamp to edge of illuminated area of DRL was 100mm and both brightness of luminance intensity of turn signal lamps and DRLs satisfied the minimum requirement of FMVSS No. 108.
- The observation distances were 300 feet, 200 feet, and 100 feet.
- The observation vehicles and the road were arranged so that the observation vehicles received the sunshine from forward, back, right and left side.
- Observers moved to the prescribed position by driving the observation vehicle, and filled in the observation result on the evaluation sheet.

Results

- The turn signal lamp of '00MY and '01MY Celica is visible at distance of 300 feet.
- Visibility of the turn signal lamp of '00MY and '01MY Celica is more than equal to the lamp remodeled to meet the regulation requirement of FMVSS No. 108.
  (Refer to the figure below)


Subjective Evaluation of Turn Signal Visibility
Subjective Rating
5
4
3
2
1
Turn signal lamp of subject vehicle No.1
Turn signal lamp of subject vehicle No.3
Turn signal lamp of vehicle remodeled to meet regulations requirement

Detail Evaluation Method and Results

1. Purpose

Evaluation of the visibility of the turn signal lamp while DRL of '00MY and '01MY Celica is illuminated.

2. Conclusion

- The turn signal lamp of '00MY and '01MY Celica is visible at the distance of 300 feet.
- Visibility of the turn signal of '00MY and '01MY Celica is more than equal to the lamp remodeled to meet the regulation requirement.

3. Evaluation Method

3.1 Preparations

3.1.1 Evaluation date and site

- Test date; From August 6 To August 9, 2001.
- The evaluation was run at Toyota Arizona Proving Ground.
- Considering the influence of the sun position (right, left, forward and back) on the turn signal visibility, two roads were chosen.
  1) Straight road in the south and north direction
  2) Straight road in the east and west direction
- Figure 1 shows the photograph of the proving ground, and Figure 2 shows the map of the proving ground.

3.1.2 Evaluation vehicle setup

- Three vehicles shown in Table 1 were prepared.
- Their lamps were adjusted before the test.
- The lamps of vehicle No.2 is same condition as vehicle No.1. It was added for the evaluation accuracy improvement.

No.	VEHICLE	LAMP ADJUST	Terminal Voltage	
1	TOYOTA CELICA -JTDDY38T3Y0015694 -ZZT231L-BLPVFA -12/1999	No change except the adjustment of aiming of headlamps	DRL	6.5V
			Turn signal lamp	13.2V
2	TOYOTA CELICA -JTDDR32T710079779 -ZZT230L-BLMSHA -10/2000	The distance from the turn signal lamp center to DRL and intensity was adjusted to meet the FMVSS108 requirement (*1)	DRL	8.9V
			Turn signal lamp	11.9V
3	TOYOTA CELICA -JTDDR32T710107306 -ZZT231L-BLMSHA -06/2001	No change except the adjustment of aiming of headlamps	DRL	6.4V
			Turn signal lamp	12.8V

Table 1 Evaluation Vehicles

*1···The turn signal lamp of vehicle No.2 was remodeled as follows.

- To assume the distance from the bulb center of the front turn signal lamp to the edge on the DRL reflector to be 100mm and a part of the reflector of DRL was covered as shown in Figure 3.
- The front turn signal lamp was adjusted to satisfy minimum intensity specified SAEJ588 by modifying the area and the terminal voltage, as shown in Table 2.and Table 3.
- The DRL intensity was adjusted to 6900 cd by changing the terminal voltage.

- Table 4 and Table 5 show the light distribution of the same type of front turn signal lamp as vehicle No.1 and No.3.
- Figure 4 shows the photograph of the evaluation vehicles.

3.1.3 Measuring instruments

Table 6 shows the specification of the voltage adjustment and illuminance measurement.

Inverter No.1	Makes	TRIPP PEOPLE
	Type	PV750FC
	Ser.No.	1727
Inverter No.2	Makes	TRIPP PEOPLE
	Type	PV750FC
	Ser.No.	1728
Fixed voltage power supply No.1	Makes	HEWLETT PACKARD
	Type	0-60/0-10A 200W
	Ser.No.	SER.3511A13172
Fixed voltage power supply No.1	Makes	HEWLETT PACKARD
	Type	0-60/0-10A 200W
	Ser.No.	SER.3511A13630
Illuminance meter	Makes	TOPCON
	Type	IM-3
	Ser.No.	90938839

Table 6 Measuring instruments

3.1.4 Observation vehicles

Toyota experimented the influence of the height of the eye point on the visibility of the turn signal lamp by using a passenger car and a heavy duty truck in Japan prior to the test in Toyota Arizona Proving Ground. As a result, no significant difference was observed between two eye point heights. The result is shown in supplement I .

For the test in Toyota Arizona Proving Ground, Toyota used four passenger cars of the same type to maintain the same evaluation condition among the observers as shown Table 7. Figure 5 shows the photograph of the observation vehicle.

Observation vehicle No.1	TOYOTA CAMRY -JT1BG22KX1U865921 -SXV20L-CEPDKA -06/2001
Observation vehicle No.2	TOYOTA CAMRY -JT2BF28K210333237 -MCV20L-AEPGKA -05/2001
Observation vehicle No.3	TOYOTA CAMRY -JT2BG22K110595174 -SXV20L-AEPNKA -06/2001
Observation vehicle No.4	TOYOTA CAMRY -JT2BF28KX10325726 -MCV20L-AEPNKA -04/2001

Table 7 Observation vehicles

3.1.5 Observation distance

When the oncoming vehicle crosses the road with the turn signal lamp blinking, it is necessary to recognize the turn signal lamp from the distance the vehicle can be stopped by braking. The driver can often safely deal with the movement of the oncoming vehicle action when there is enough distance. On the other hand, the visibility of the turn signal lamp from comparatively short distance is important.

We set three distances (300 feet, 200 feet, and 100 feet) as an observation distance.

1) 300 feet was set referring to the FEDERAL REGISTER VOL.58 No.6/Monday Jan.11 1993 (reference material (2)).
2) 200 feet was set from the stop distance of the passenger car shown in Figure 6.
3) 100 feet was set as the oncoming car confirmation distance in the intersection.
   In the intersection where the complicated situation is considered, the turn signal lamp of the oncoming car should be surely confirmed.

In the preliminary experiment in Japan, we confirmed that the turn signal lamp of Celica could be recognized at 300 feet or more. The content of a preliminary experiment is shown in supplementation II.

In the Vehicle Safety Standard in Japan, it is necessary to be able to recognize the turn signal lamp from 100m(330ft). We referred to this standard to evaluate the visibility.

3.1.6 Observers

Twenty observers who were not involved in the lamp business were chosen. Ten observers were 45 years old or older. Observers were chosen among the resident around Phoenix in Arizona. They were divided into five groups randomly, and participated in the evaluation at different time zones.

Table 8 shows the list of observers.

3.1.7 Evaluation procedure

(1) Setup and the order of evaluation vehicles

The vehicles and cones (sign ○●) were set as shown in Figure 7.

Observers started the vehicle one by one keeping the interval so that they would not disturb the evaluation activity each other.

The observation vehicle stopped at the cone position.

At each distance, observers were instructed to rate the visibility of the turn signal of each evaluation vehicle and record their ratings on the sheet.

Figure 8 is photograph of the evaluation.

(2) Explanation to observers

- Evaluate the visibility rating of the turn signal lamp of the vehicle on front while stopping.
- Stop the vehicle at the right side of the first cone, and evaluate the visibility of the turn signal of the oncoming car according to the rating shows in Table 9.
- Re-start and stop the vehicle at the right side of the second cone, and evaluate the visibility of the turn signal lamp.
- Re-start and stop the vehicle at the right side of the third cone, and evaluate the visibility of the turn signal lamp.
- Move the vehicle into the other side (opposite traffic lane) and stop at the starting line.
- After the signal from the person in charge was sent, repeat the same evaluation as done in the other lane.
- No sunglasses during the evaluation. (Because if the person put on sunglasses, the one can readily discern the flashing of turn signals.)
- Figure 9 shows the procedure book for the explanation to observers.
- Table 10 shows the evaluation sheet handed out to the observers.

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor

Table 9

4. Result

Results of the study are presented as follows.

4.1 Overall average

Figure 10 shows the evaluation rating of the overall average value of observation distance (100,200,300ft) and the sun position (front, back, right side, and left side).
Because the evaluation with the road for the south north had begun to rain while evaluating, the test of the evaluation group 4 and 5 was discontinued. Therefore, data of this item is not included.

As for the turn signal lamp of vehicle No.1 and No.3, a high evaluation rating was obtained compared with the turn signal lamp of the modified lamp to meet the regulation requirement.

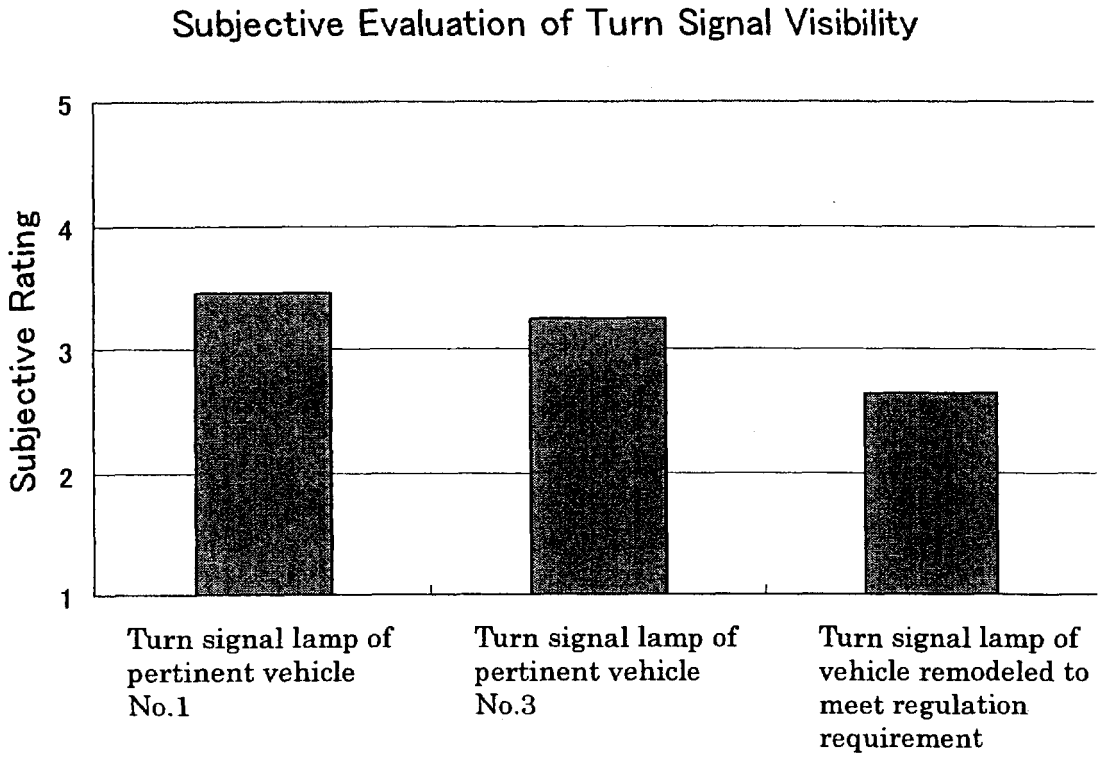


Fig 10 Subjective Evaluation of Turn signal Visibility

4.2 The influence of the observation distance.

Figure 11 shows the overall average of the evaluation rating according to the sun position and the observation distance.

4.3 The influence of the sun position.

Only group 1 was able to evaluate the visibility in all sun position; right, left, forward and back. Therefore, the test result was analyzed only by the data of group 1 concerning the sun position.

a) Difference of right and left

Figure 12 shows a difference of right and left of the sun position.

b) Difference of forward and back.

Figure 13 shows a difference of forward and back of the sun position.

4.4 Ambient illumination data

A range of ambient illumination data was taken during each evaluation group.

The data as shown in table 11

	Course	Group	A horizontal plane	
			High (lux)	Low (lux)
First day	East-west	1	96000	82000
		2	114000	103000
		3	104000	88000
Second day	South-north	1	96000	83000
		2	40000	38000
		3	11000	9000
Third day	East-west	4	135000	66000
		5	103000	43000
	South-north	4	54000	30000
		5	30000	26000

Table 11 Ambient illumination data

SUPPLEMENT

Supplement I : The evaluation sheet which all the observers filled in are attached.

Supplement II : Investigation of the influence of the eye point height.

Supplement III : Investigation of turn signal lamp recognizing distance.

REFERENCES

FEDERAL REGISTER VOL.58 No.6/Monday Jan.11 1993

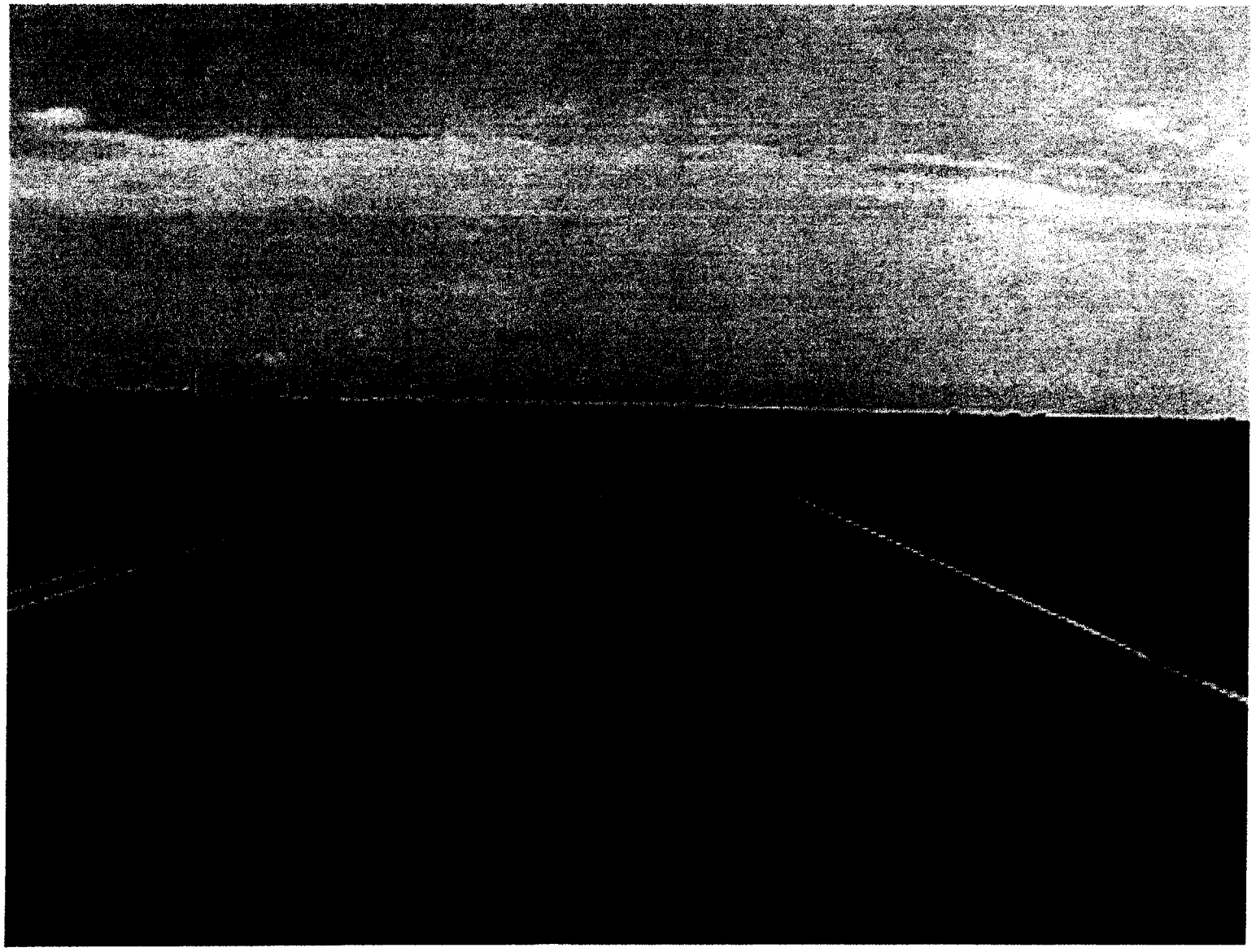


Figure 1

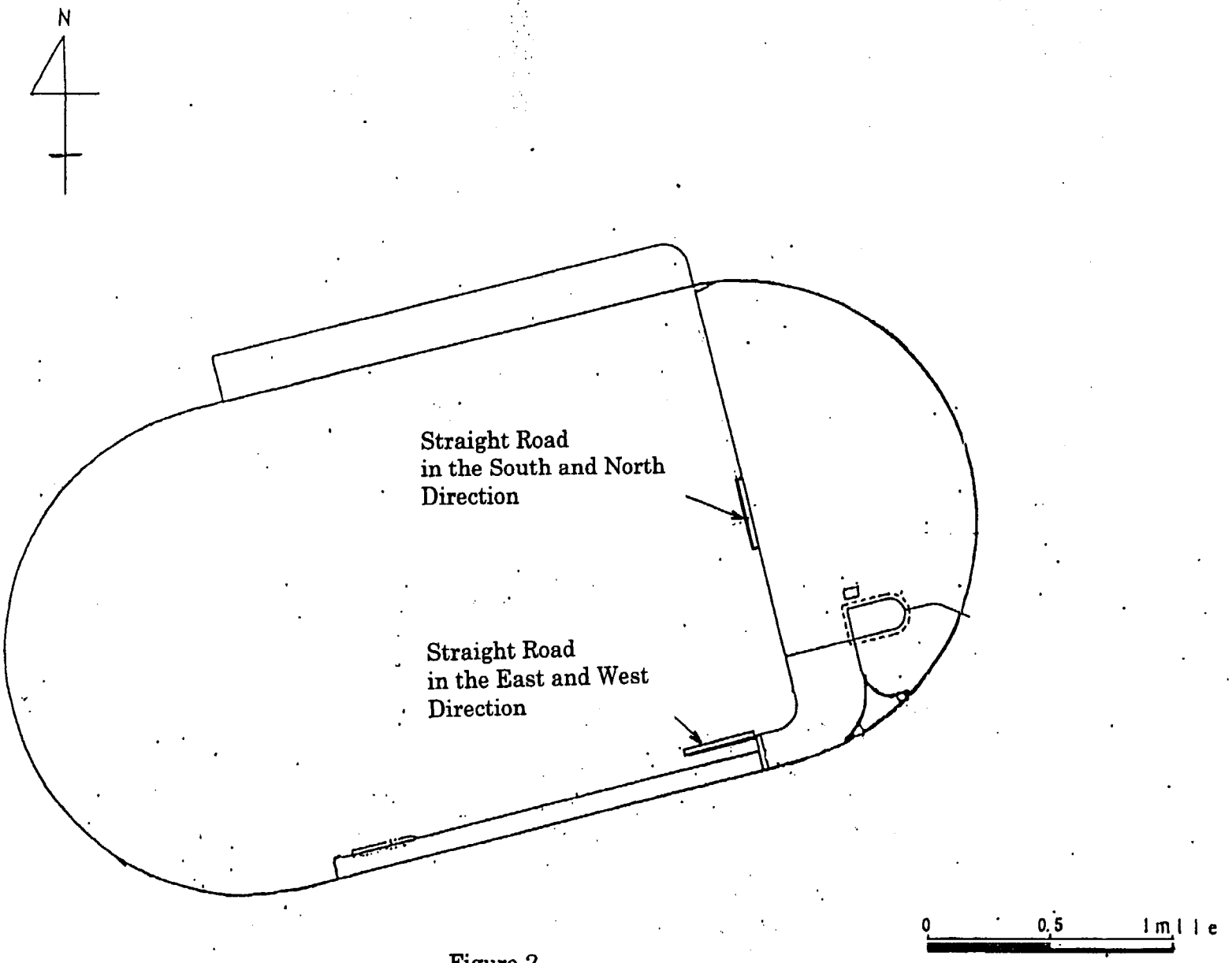
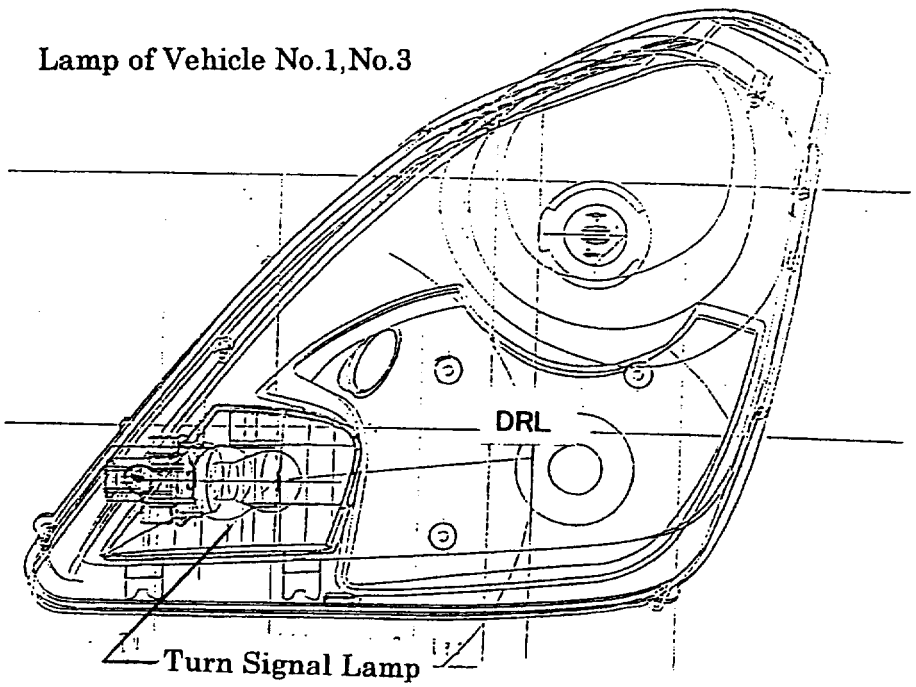

N
Straight Road
in the South and North
Direction
Straight Road
in the East and West
Direction
0
0.5
1 mile

Figure 2


Lamp of Vehicle No.1,No.3
DRL
Turn Signal Lamp

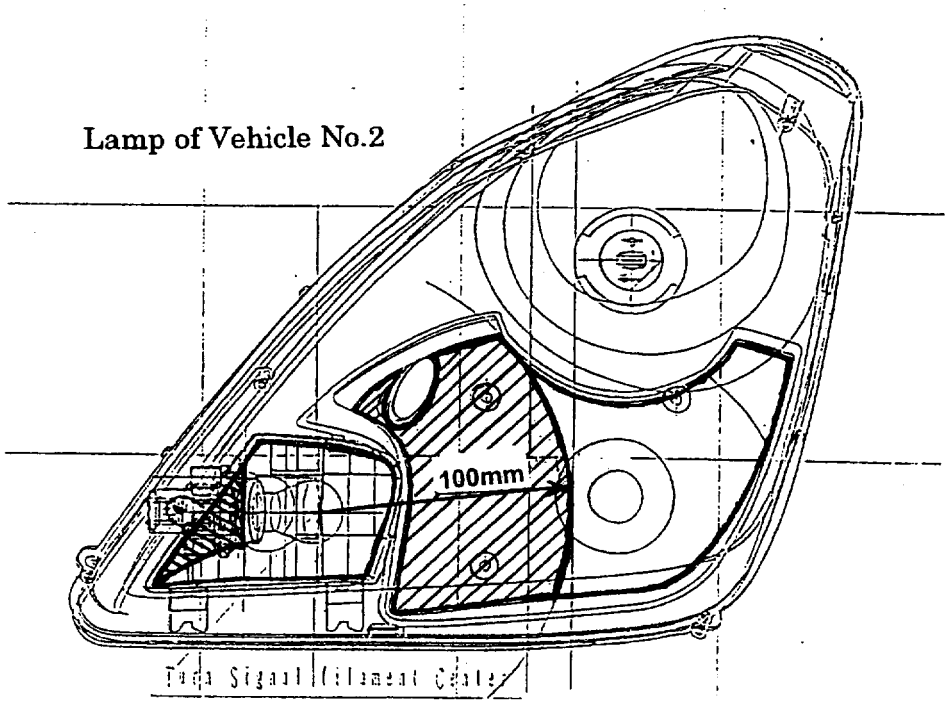

Lamp of Vehicle No.2
100mm

Figure 3

[Photometric Test Result]

配光 試験成績書(グループ)

日付 : 2001年07月28日

承認	検討	作成
松村		吉田

[Customer] 得意先名 : トヨタ自動車 (株)

[Model] 形式・品名 : 770T CHL

[Part #] 品 番 :

受付No : 2

[Specification] ランプ定格 : 12 V 21 W C-6 [Measured Distance] 測定距離 : 3. 16m

[Destination] 向 先 : 北米 [Unit] 単 位 : cd

適用規格 : FMVSS FRONT TURN SIGNAL LAMP(AMBER 1LAMP)

	POINT	SPEC	R-1
1	10U-5L 5U-20L 5D-20L 10D-5L	130MIN	204.3
2	5U-10L H-10L 5D-10L	250MIN	334.0
3	5U-V H-5L H-V H-5R 5D-V	950MIN	978.1*
4	5U-10R H-10R 5D-10R	250MIN	342.3
5	10U-5R 5U-20R 5D-20R 10D-5R	130MIN	330.1
	MAXIMUM		246.0
	POSITION(V)		5.00U
	POSITION(H)		V
	VOLTAGE(V)		11.900
	CURRENT(A)		1.782

判 定 : 合 格

[Conclusion: Pass]

Table 2

[Photometric Test Result]

配光 試験成績書

日付 : 2001年07月28日

承認	検討	作成
杉村		吉田

[Customer] 得意先名 : トヨタ自動車（株）

[Model] 形式・品名 : 770T CHL

[Part #] 品 番 :

受付No : 2

[Specification] ランプ定格 : 12 V 21 W C-6 [Measured Distance] 測定距離 : 3．16m

[Destination] 向 先 : 北米 [Unit] 単 位 : cd

適用規格 : FMVSS FRONT TURN SIGNAL LAMP(AMBER 1LAMP)

POINT	SPEC	R-1
10U-5L	40MIN	95.7
10U-5R	40MIN	182.0
5U-20L	25MIN	28.5
5U-10L	75MIN	105.0
5U-V	175MIN	246.0
5U-10R	75MIN	112.4
5U-20R	25MIN	57.7
H-10L	100MIN	134.0
H-5L	200MIN	135.1
H-V	200MIN	200.0
H-5R	200MIN	205.0
H-10R	100MIN	119.0
5D-20L	25MIN	52.1
5D-10L	75MIN	95.0
5D-V	175MIN	192.0
5D-10R	75MIN	110.9
5D-20R	25MIN	53.7
10D-5L	40MIN	28.0
10D-5R	40MIN	36.7
MAXIMUM		246.0
POSITION(V)		5.00U
POSITION(H)		V
VOLTAGE(V)		11.900
CURRENT(A)		1.782

＊各ポイントにおいて規格値の６０％以上満足すること。

判 定 : 合 格

[Conclusion : Pass]

Table 3

[Photometric Test Result]

013 A236

配 光 試験成績書

(全59ページ中14ページ)

1999/06/09 作成

承認	検討	作成
横原	六川	海野

[Customer] 得意先名 : トヨタ [Toyota]

[Model] 型式:品名 : 770T コンビネーションヘッドランプ

[Part #] 品 番 : 10000-76967 10100-76967

[Destination] 向 先 : 北米 ← [North America]

[Specification] ランプ定格 : 12 V 21 W C-6

適用規格 : FMVSS FRONT TURN SIGNAL LAMP(AMBER 1LAMP)

指示No. : 03-210416

ステップ : 認証(1)

測定距離 : 3. 16m ← [Measured Distance]

単 位 : cd ← [Unit]

25

	POINT	SPEC	R-1
	10U-5L		
1	5U-20L	130MIN	784.0
	5D-20L		
	10D-5L		
	5U-10L		
2	H-10L	250MIN	800.0
	5D-10L		
	5U-V		
	H-5L		
3	H-V	950MIN	2568.0
	H-5R		
	5D-V		
	5U-10R		
4	H-10R	250MIN	682.0
	5D-10R		
	10U-5R		
5	5U-20R	130MIN	437.6
	5D-20R		
	10D-5R		
MAXIMUM			732.0
POSITION(V)			3.72D
POSITION(H)			1.51L
VOLTAGE(V)			14.710
CURRENT(A)			1.994

判 定 : 合 格

[Conclusion : Pass]

Table 4

[Photometric Test Result]

013 A201

配 光 試験成績書

1999/06/09 作成

承認	検討	作成
		海野

[Customer] 得意先名 : トヨタ [Toyota]

[Model] 型式:品名 : 770T コンビネーションヘッドランプ

[Part #] 品 番 : 10000-76967 10100-76967

[Destination] 向 先 : 北米 ← [North America]

[Specification] ランプ定格 : 12 V 21 W C-6

適用規格 : FMVSS FRONT TURN SIGNAL LAMP(AMBER 1LAMP)

指示No. : 03-210416

ステップ : 認証(1)

測定距離 : 3. 16m ← [Measured Distance]

単 位 : cd ← [Unit]

25

POINT	SPEC	R-1
10U-5L	40MIN	335.0
10U-5R	40MIN	175.0
5U-20L	25MIN	136.0
5U-10L	75MIN	238.0
5U-V	175MIN	526.0
5U-10R	75MIN	250.0
5U-20R	25MIN	54.5
H-10L	100MIN	267.0
H-5L	200MIN	515.0
H-V	200MIN	568.0
H-5R	200MIN	352.0
H-10R	100MIN	229.0
5D-20L	25MIN	112.0
5D-10L	75MIN	295.0
5D-V	175MIN	607.0
5D-10R	75MIN	203.0
5D-20R	25MIN	85.1
10D-5L	40MIN	201.0
10D-5R	40MIN	123.0
MAXIMUM		732.0
POSITION(V)		3.72D
POSITION(H)		1.51L
VOLTAGE(V)		14.710
CURRENT(A)		1.994

※各ポイントに於て規格値の60%以上満足すること。 判定 : 合格

[Conclusion : Pass]

Table 5

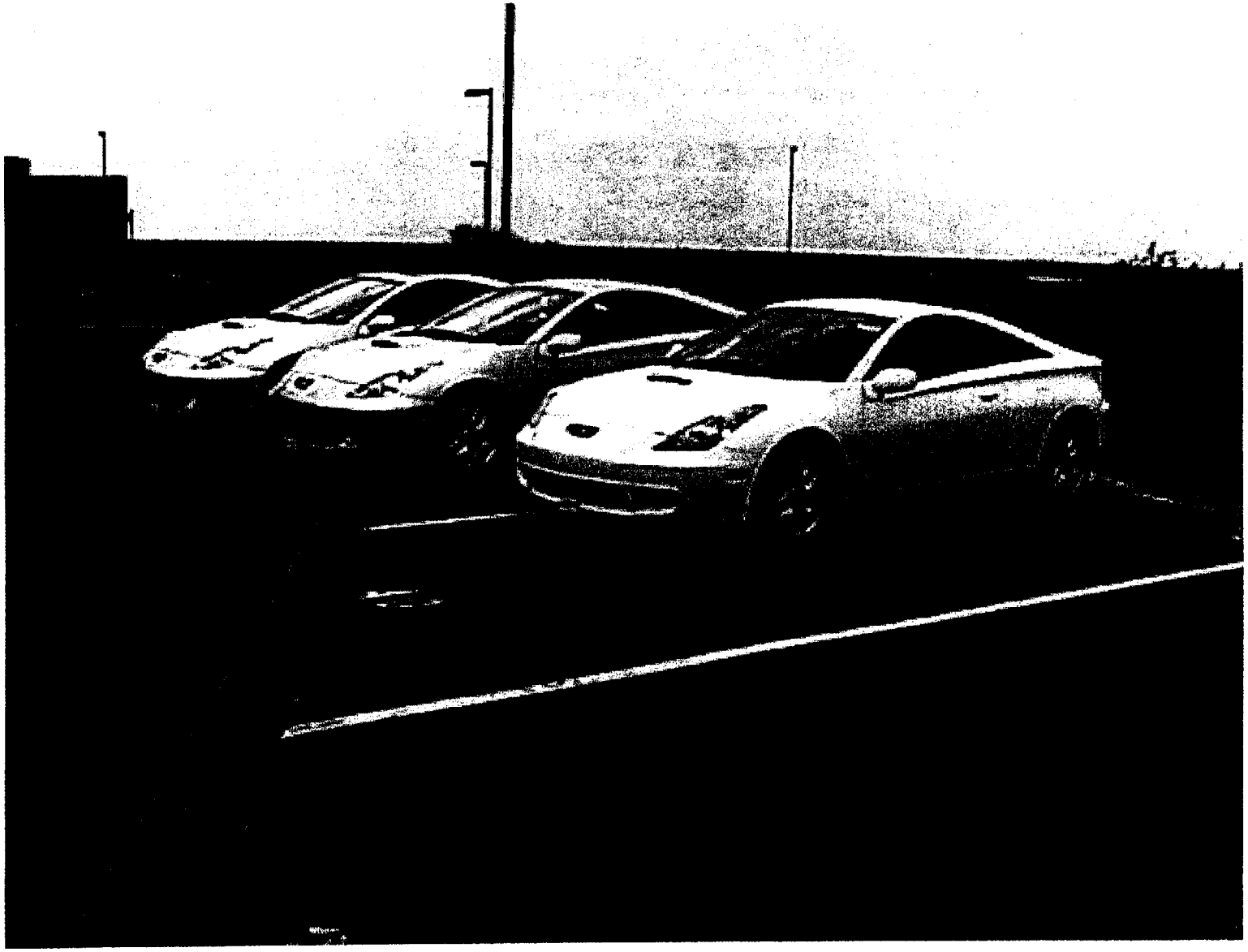


Figure 4

Figure 5

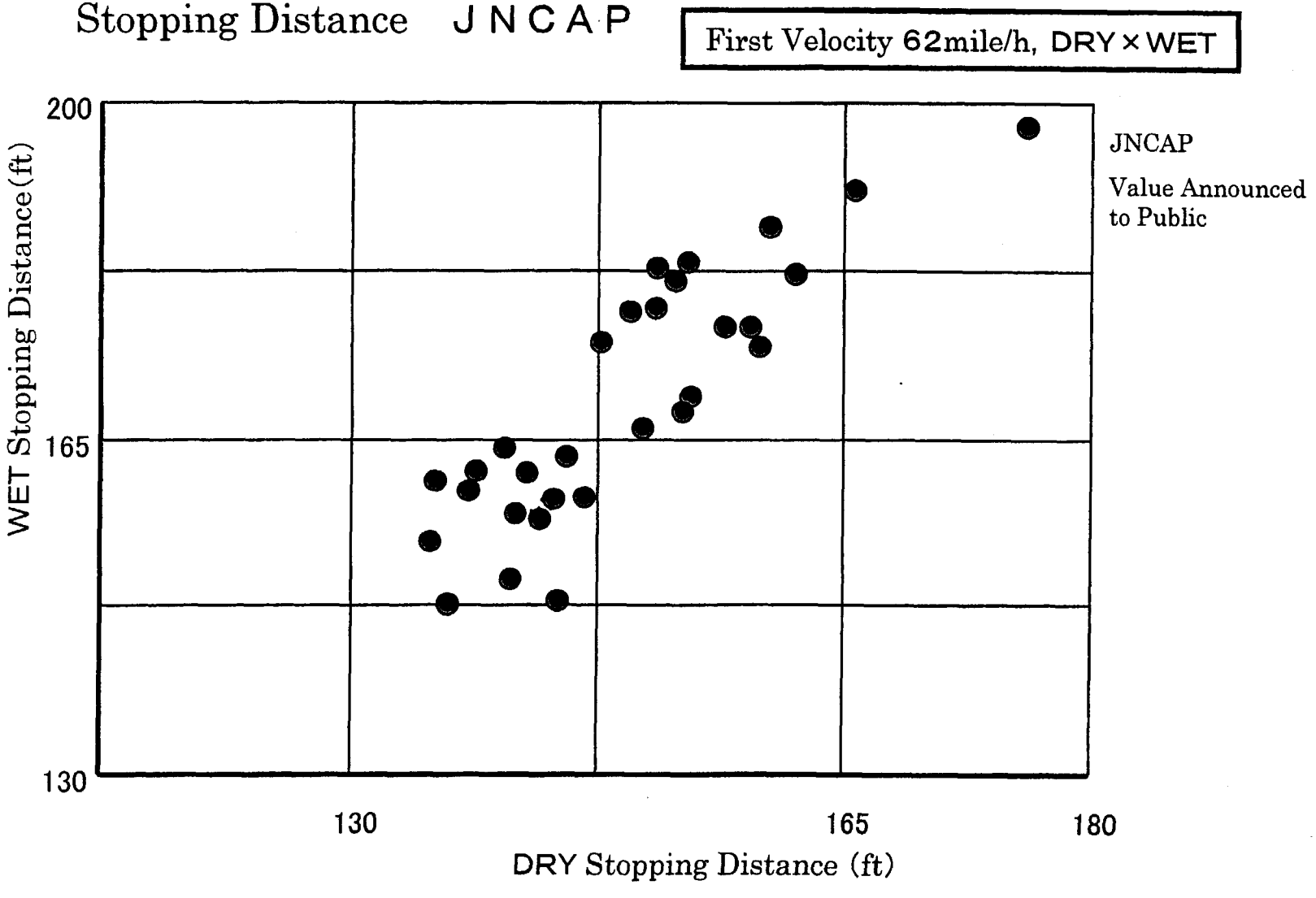

Stopping Distance J N C A P
First Velocity 62mile/h, DRY × WET
200
165
130
WET Stopping Distance (ft)
130
165
180
DRY Stopping Distance (ft)
JNCAP
Value Announced to Public

Figure 6

Table 8

Panel #	Group #	Is your job involve vehicle lighting?	First name	Last name	age	Gender	Cont ractor?	eye color	Glass while driving	Reading glass	eye sight while driving	Occupation	Test Date A:8/6, 7 B:8/8
1	1	No	Steven	Bozsi	33	male	Yes	Green	no	no	20/20	Design Engineer	A
2	1	No	James	Noble	27	male	Yes	Blue	No	No	20/20	Correction Officer	A
3	1	No	Tom	Stout	57	male	Yes	Brown	yes	yes	20/20	Cowboy/Rancher	A
4	1	No	Nelson	Ackrish	55	male	Yes	hazel	yes	yes	20/20	Pattern Maker	A
5	2	No	Larry	Carroll	18	male	Yes	Brown	No	no	20/20	Unemployed	A
6	2	No	Ray	Seppala	70	male	Yes	hazel	yes	yes	20/20	Permit Officer Trucking	A
7	2	No	Walter	Ballesteros	35	male	Yes	brown	yes	no	20/20	Contract Technician	A
8	2	No	George	Gruber	62	male	Yes	Green	yes	yes	20/20	Truck Driver	A
9	3	No	Shirley	Cooley	67	female	Yes	Blue	yes	yes	20/20	Retired Teacher	A
10	3	No	Patricia	Park	64	female	Yes	brown	yes	yes	20/20	Retired Officer Assistant	A
11	3	No	Celena	Eddington	24	female	Yes	blue	yes	no	20/20	Office Assistant	A
12	3	No	Eric	Stec	31	male	No	hazel	no	no	20/20	Senior Technician	A
13	4	No	Nikie	Martin	56	female	Yes	Blue	no	no	20/20	IRS Supervisor	B
14	4	No	Darcy	Green	32	female	No	green	yes	no	20/20	Office Assistant	B
15	4	No	John	Wood	42	male	Yes	brown	yes	yes	20/20	Electronics Technician	B
16	4	No	Donald	Cline	59	male	Yes	blue	yes	yes	20/20	Retired Driving Instructor	B
17	5	No	Robert	Stork	59	male	Yes	blue	yes	yes	20/20	Financial Services	B
18	5	No	James	Hilliker	32	male	Yes	Brown	no	no	20/20	Truck Driver	B
19	5	No	Tamara	Thomas	43	female	Yes	hazel	no	no	20/20	Office Assistant	B
20	5	No	Ken	Martin	60	male	Yes	hazel	no	no	20/20	Osha Consultant	B

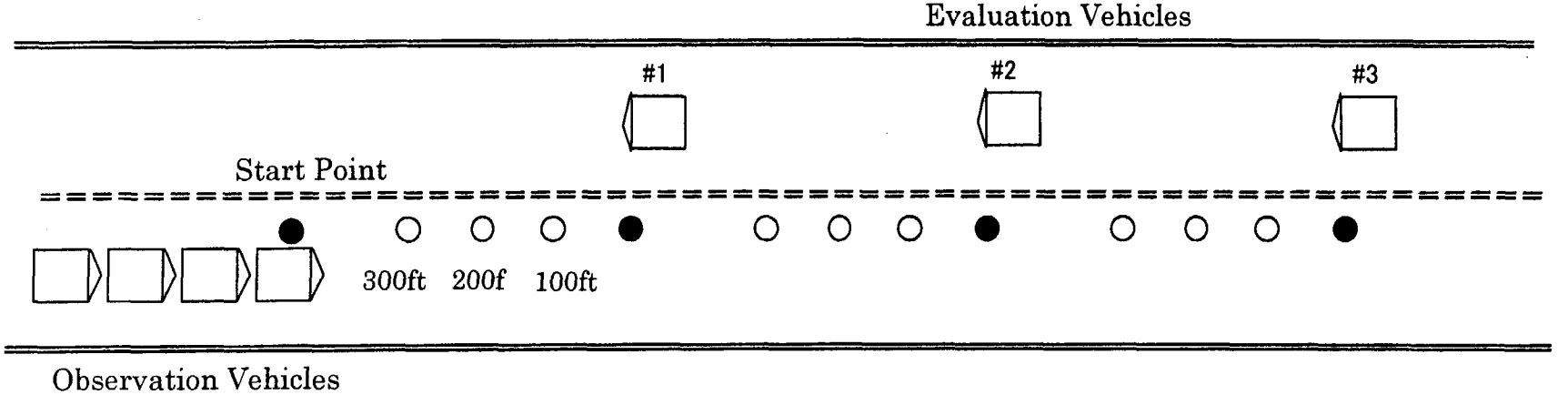

Evaluation Vehicles
#1
#2
#3
Start Point
300ft
200f
100ft
Observation Vehicles

Figure 7

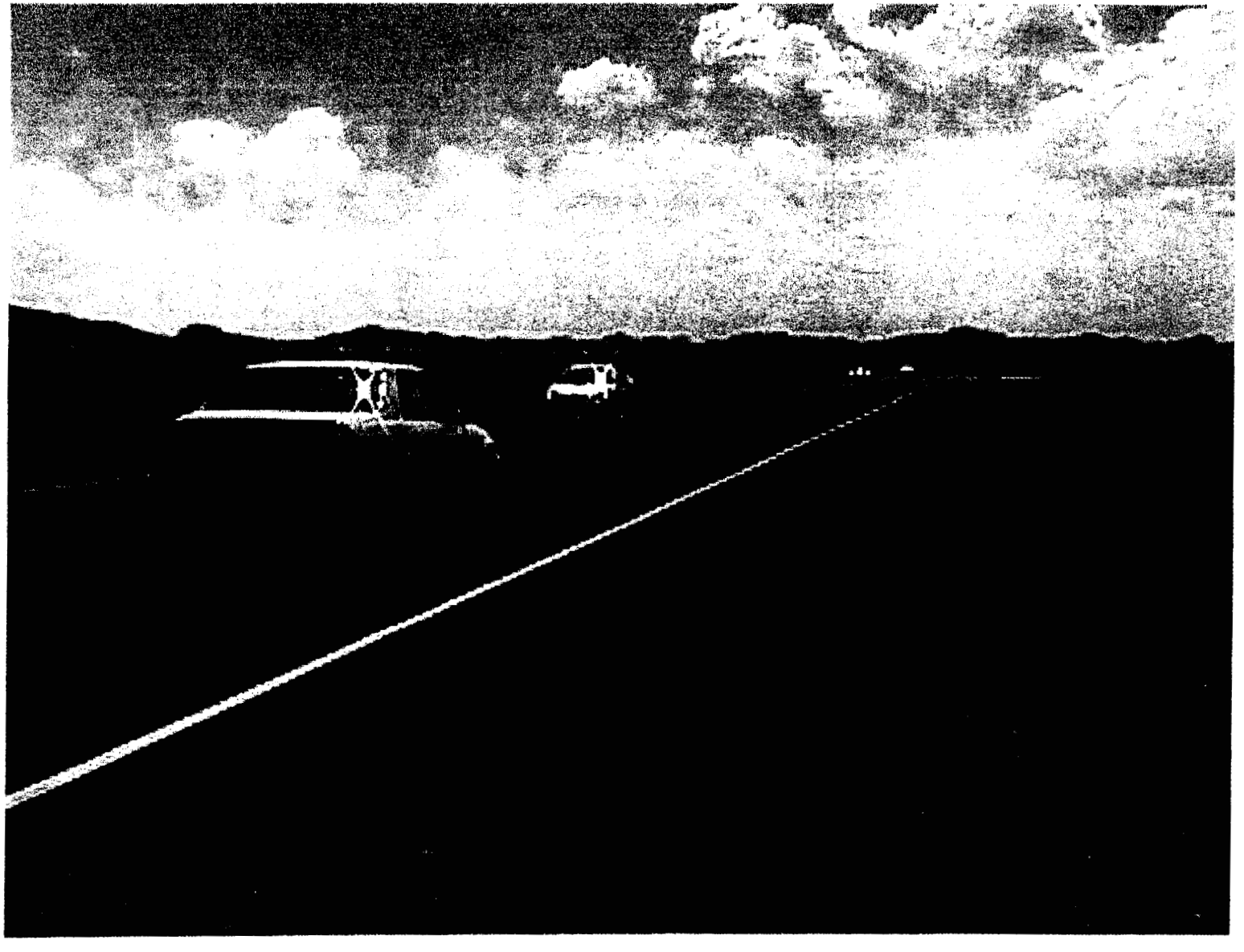


Figure 8

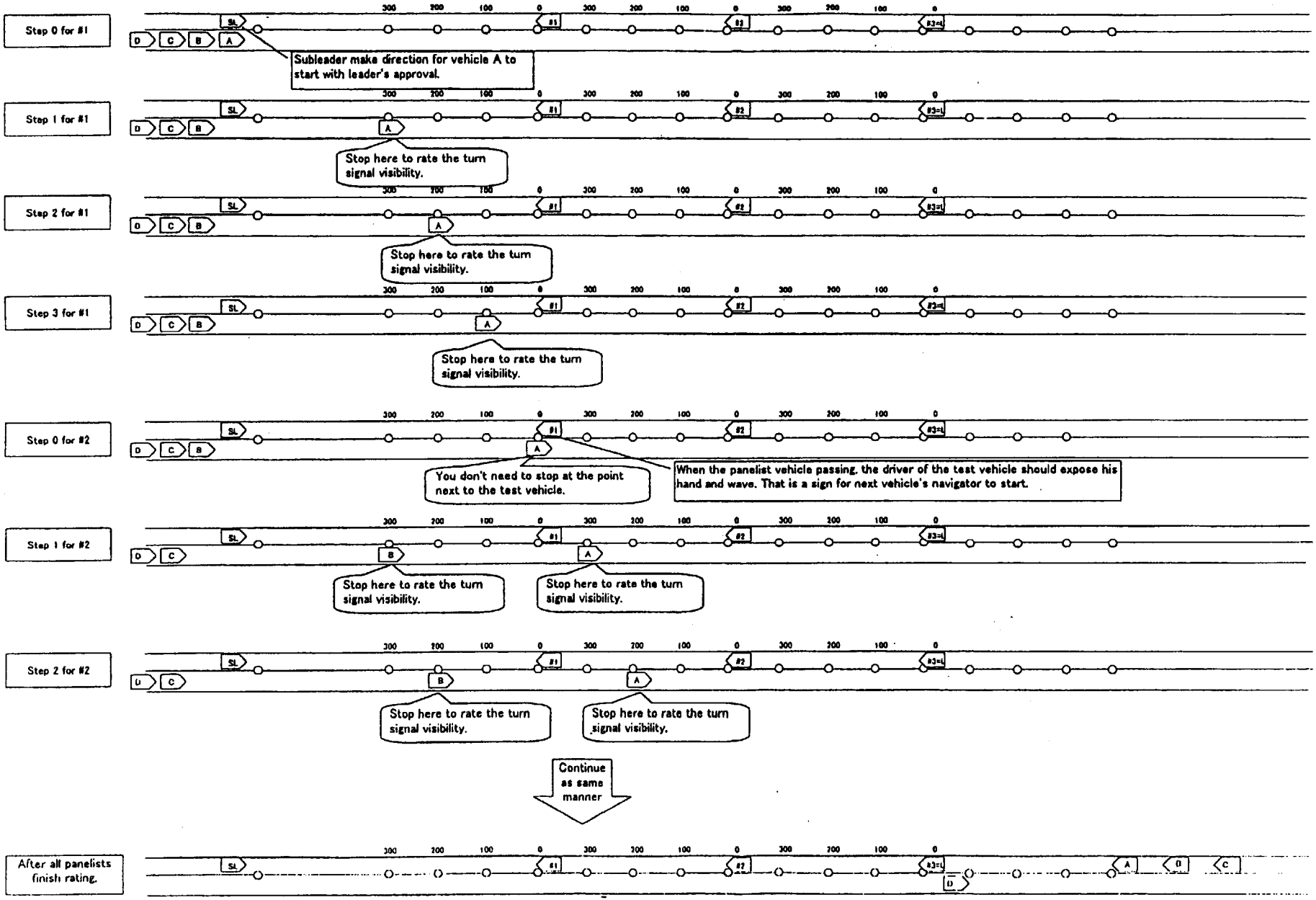
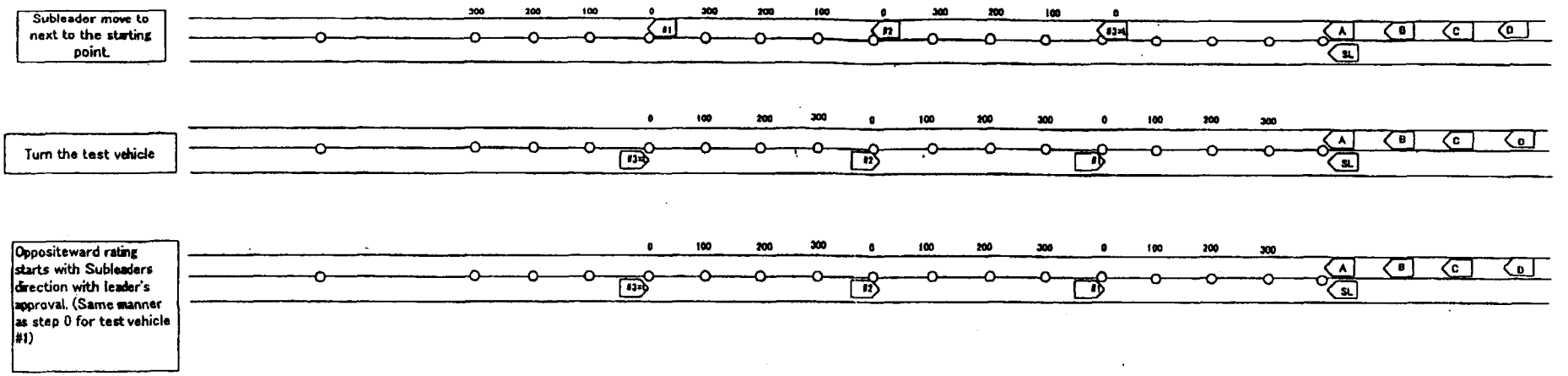

Step 0 for #1
Subleader make direction for vehicle A to start with leader's approval.
Step 1 for #1
Stop here to rate the turn signal visibility.
Step 2 for #1
Stop here to rate the turn signal visibility.
Step 3 for #1
Stop here to rate the turn signal visibility.
Step 0 for #2
You don't need to stop at the point next to the test vehicle.
When the panelist vehicle passing, the driver of the test vehicle should expose his hand and wave. That is a sign for next vehicle's navigator to start.
Step 1 for #2
Stop here to rate the turn signal visibility.
Stop here to rate the turn signal visibility.
Step 2 for #2
Stop here to rate the turn signal visibility.
Stop here to rate the turn signal visibility.
Continue as same manner
After all panelists finish rating.

Figure 9-1



IMPORTANT ; Notice for Accuracy and Safty

Panelists must obey navigators' directions and followings,

The vehicle should be stopped with respect to following,
(1)Stop at the cone as it comes just next to the driver, torelance should be within 2 fts.
(2)The distance between the vehicle and cone should be closer than aproximately 2 fts, but be sure no hitting to the cone, please.
(3)The vehicle should be parallel to the course as much as possible.
(4)Once you stop at evaluation point, you can rate only verbally. Decimal rates are not permitted. The navigator next to you will write down. Please be sure to step on the brake pedal.

Please be aware of your surroundings.

Be careful to avoid hitting any cones.
In case of hitting, you must pause and obey navigator's direction. Navigator will repair to put at certain location, Driver should keep riding and keep sure navigator's safety.
And also please be careful not to be out of course especially North-South course.

Your navigator will carry you with the vehicle betwen garage and the course.
You are allowed to drive only on the limited test course we specify.
You can start only after your navigator tell you "Go".
You must not drive more than 30mph. And don't accelrate urgently.
Never pass any vehicles.

Please don't discuss your impression with another panelists because it may influence other persons and we may fail to get accurate data.
Even if you hear some other persons' impressions, you should be honest your own impression.

Please keep clean inside the vehicle. All of those are rental.

If you have any questions during the experiment, let your navigator know. He should answer with his own knowledge or using radio CH11.

Figure 9-2

Name: _____ Age: _____

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: M F

Do you wear corrective lens? Yes No

Have you had eye exam in the last 2 years? Yes No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/
E ← W	Date,Time	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/
N ↓ S	Date,Time	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/
N ↑ S	Date,Time	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/

Table 10

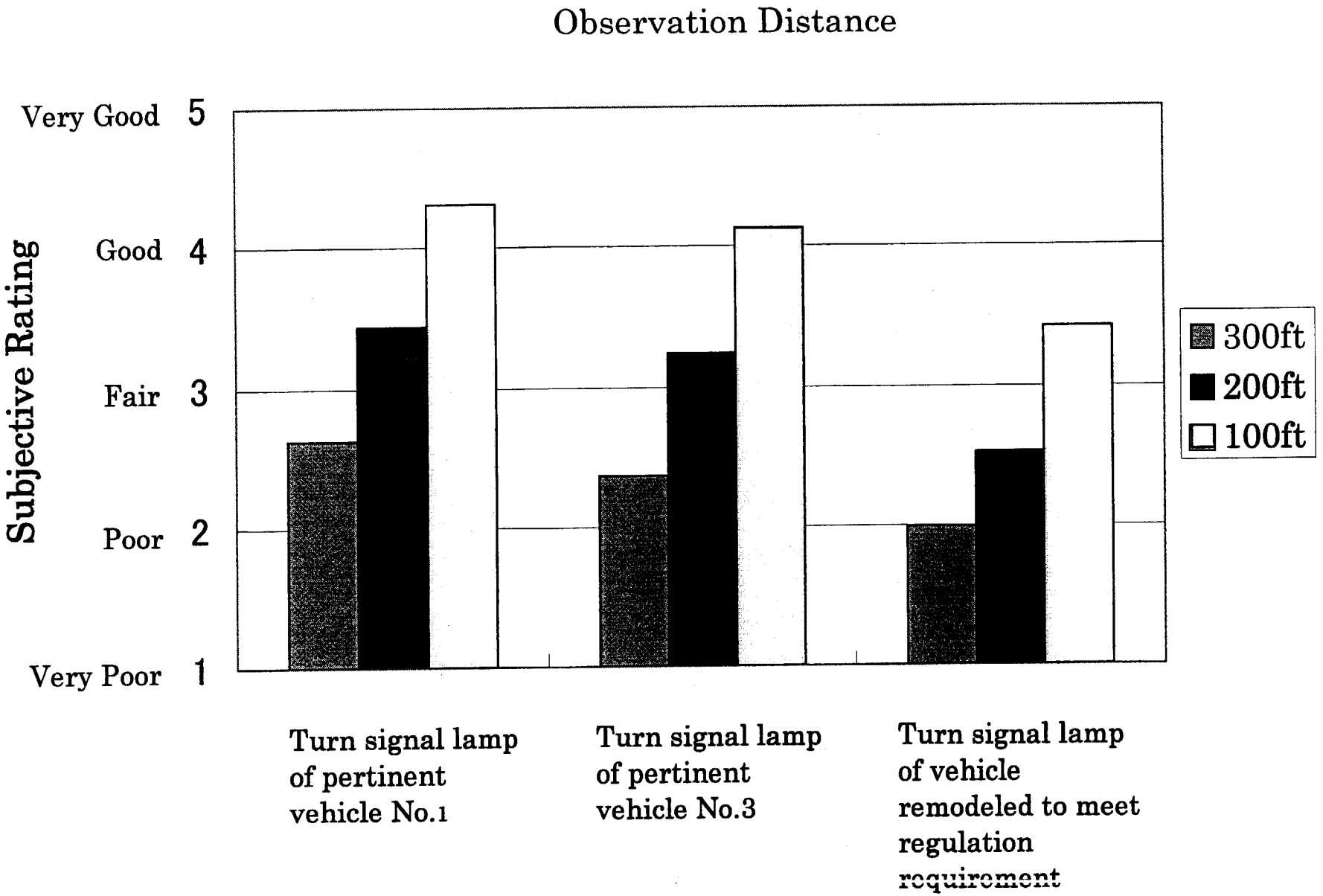

Observation Distance
Very Good 5
Good 4
Fair 3
Poor 2
Very Poor 1
Subjective Rating
300ft
200ft
100ft
Turn signal lamp of pertinent vehicle No.1
Turn signal lamp of pertinent vehicle No.3
Turn signal lamp of vehicle remodeled to meet regulation requirement

Figure 11

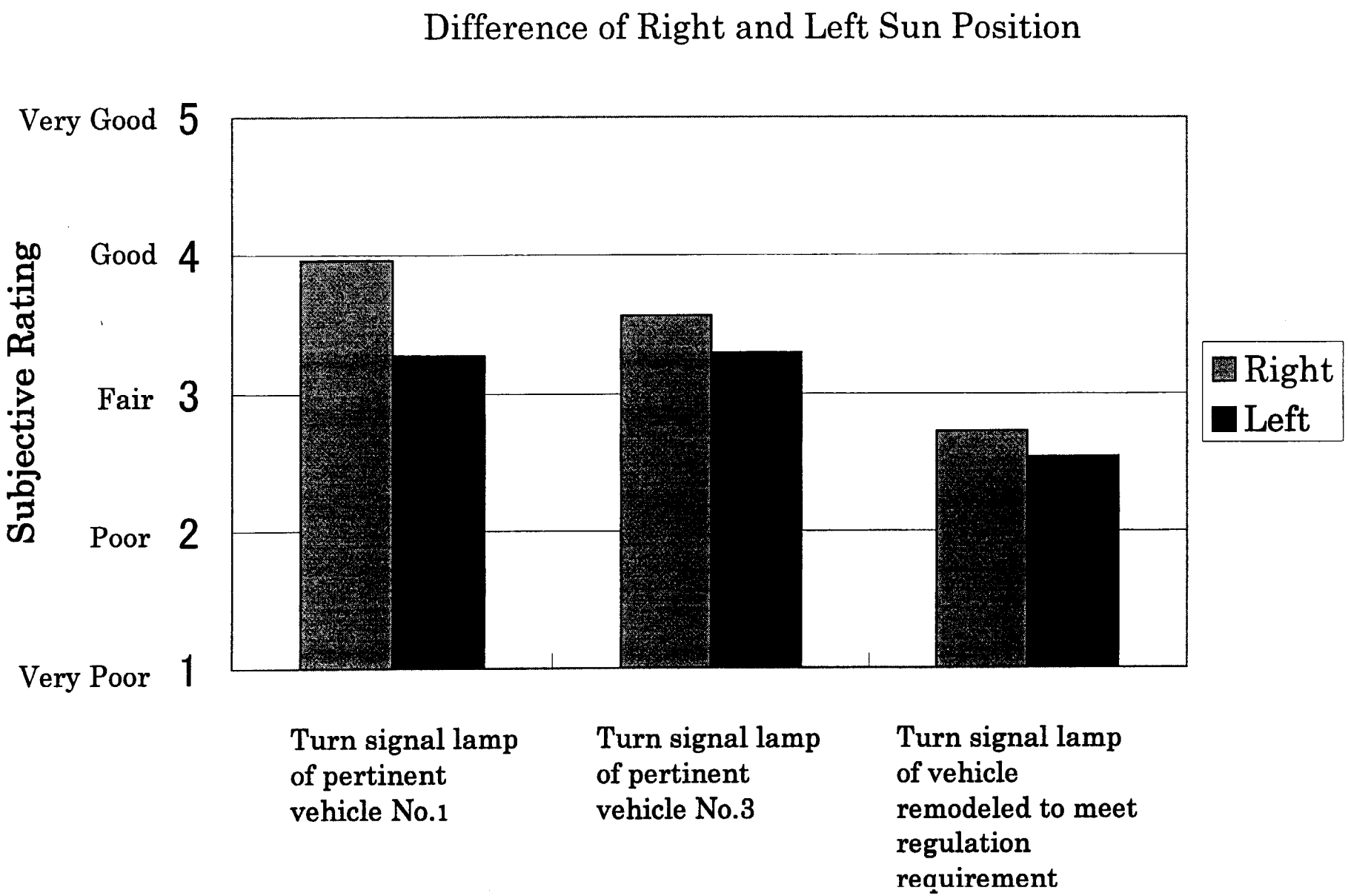

Difference of Right and Left Sun Position
Very Good 5
Good 4
Fair 3
Poor 2
Very Poor 1
Subjective Rating
Right
Left
Turn signal lamp of pertinent vehicle No.1
Turn signal lamp of pertinent vehicle No.3
Turn signal lamp of vehicle remodeled to meet regulation requirement

Figure 12

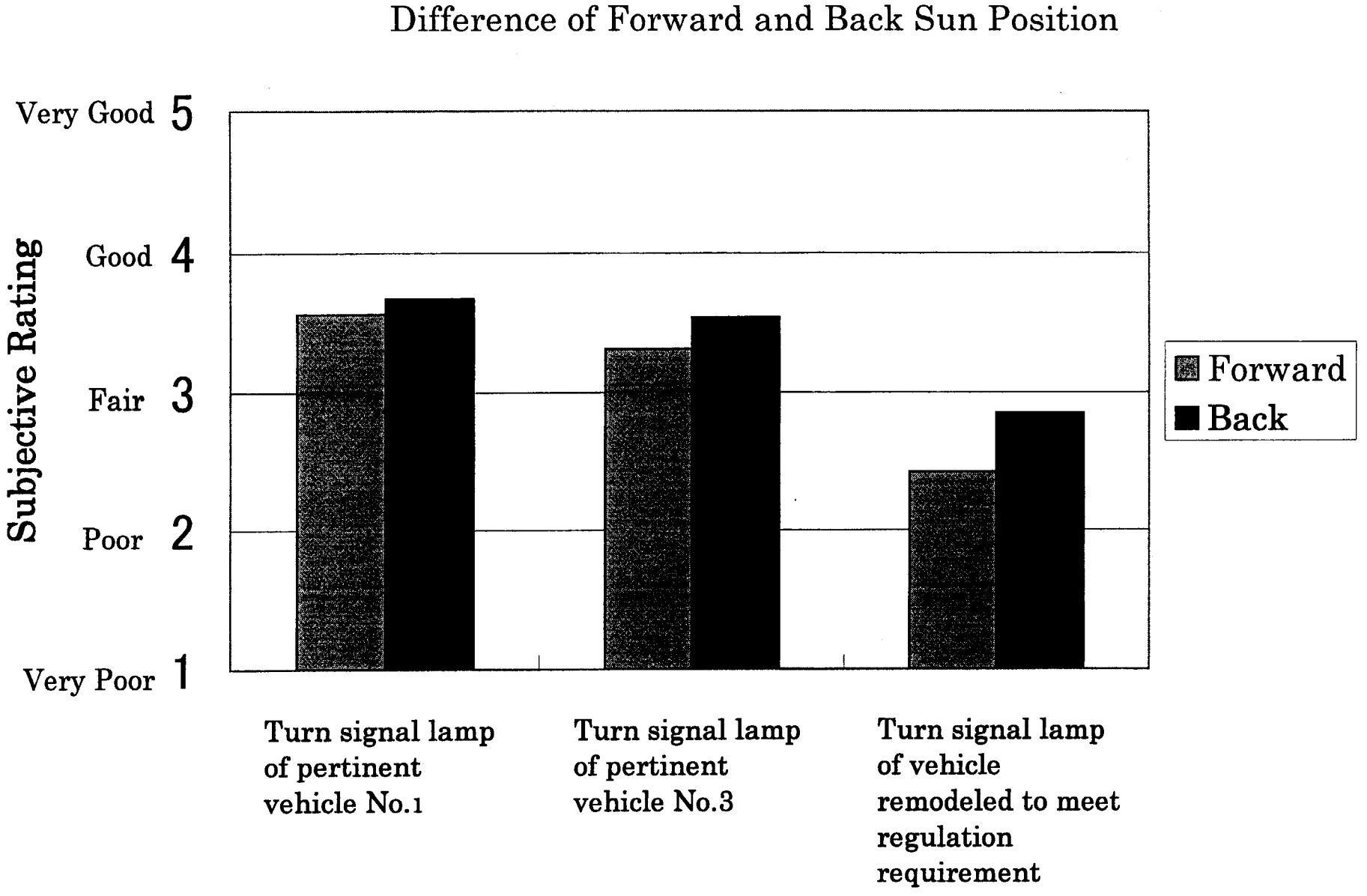

Difference of Forward and Back Sun Position
Very Good 5
Good 4
Fair 3
Poor 2
Very Poor 1
Subjective Rating
Forward
Back
Turn signal lamp of pertinent vehicle No.1
Turn signal lamp of pertinent vehicle No.3
Turn signal lamp of vehicle remodeled to meet regulation requirement

Figure 13

SUPPLEMENT

Supplement I : The evaluation sheet which all the observers filled in are attached.

Supplement II : Investigation of the influence of the eye point height.

Supplement III : Investigation of turn signal lamp recognizing distance.

P1
Gr.1

Name: Steven Bozsi Age: 33

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? Yes (No)

Have you had eye exam in the last 2 years? Yes (No)

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	3 / 3	1 / 1	3 / 3
	8/9	200 ft.	4 / 3	2 / 3	4 / 5
	9:30~10:00	100 ft.	5 / 5	4 / 5	5 / 5
E ← W	Date,Time	300 ft.	2 / 3	2 / 2	2 / 3
	8/9	200 ft.	4 / 4	4 / 3	5 / 5
	10:00	100 ft.	5 / 5	5 / 5	5 / 5
NIS	Date,Time	300 ft.	3 / 3	2 / 2	3 / 3
	8/7	200 ft.	5 / 4	3 / 3	4 / 4
	9:40~	100 ft.	5 / 5	4 / 4	5 / 5
NIS	Date,Time	300 ft.	2 / 3	1 / 2	3 / 2
	8/9	200 ft.	4 / 4	3 / 3	4 / 4
	10:15~	100 ft.	5 / 5	4 / 5	5 / 5

JAMES

P.2

Gr. 1

Name: James Nohk Age: 27

Circle Evaluation vehicle Number: (A) B, C, D Circle Sex: (M) F

Do you wear corrective lens? Yes (No)

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	4 / 4	3 / 3	3 / 3
	8/6/01	200 ft.	5 / 5	3 / 3	3 / 3
	9:30/9:45	100 ft.	5 / 5	3 / 3	4 / 4
E ← W	Date,Time	300 ft.	3 / [illegible]	3 / 3	3 / 3
	8/6	200 ft.	4 / [illegible] 4	3 / 3	4 / 3
	9:55/10:07	100 ft.	5 / 5	3 / 3	4 / 4
N ↓ S	Date,Time	300 ft.	4 / 4	3 / 3	4 / 3
	8/7/01	200 ft.	4 / 4	3 / 3	4 / 4
	9:45am	100 ft.	5 / 5	4 / 4	5 / 5
N ↑ S	Date,Time	300 ft.	3 / 3	2 / 2	4 / [illegible] 3
	8/7/01	200 ft.	3 / 4	2 / 2	4 / 4
	10:09am/10:18am	100 ft.	4 / 4	3 / 3	5 / 5

P. 3

Gr 1

Name: Tom Stout Age: 57

Circle Evaluation vehicle Number: A, B (C) D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date, Time	300 ft.	3 / 3	2 / 1	2 / 2
	8-6-01 9:30AM	200 ft.	4 / 3	2 / 2	3 / 3
		100 ft.	4 / 4	2 / 2	3 / 3
E ← W	Date, Time	300 ft.	2 / 2	1 / 1	2 / 2
	8-6-01 10:00 A.M.	200 ft.	2 / 3	2 / 2	2 / 3
		100 ft.	3 / 4	3 / 3	4 / 4
N ↓ S	Date, Time	300 ft.	3 / 3	2 / 2	3 / 2
	8-7-01 9:35AM.	200 ft.	3 / 4	3 / 3	4 / 3
		100 ft.	4 / 4	4 / 3	4 / 4
N ↑ S	Date, Time	300 ft.	2 / 2	2 / 2	3 / 2
	8-7-01 10:10 AM	200 ft.	3 / 2	2 / 2	3 / 2
		100 ft.	4 / 3	3 / 3	4 / 3

P.4

Gr 1

Name: NELSON ACKRISH Age: 55

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	3 / 4	2 / 2	2 / 2
	8-6-01 9:40am	200 ft.	4 / 4	3 / 2	3 / 3
		100 ft.	5 / 5	3 / 3	5 / 5
E ← W	Date,Time	300 ft.	2 / 2	1 / 1	1 / 2
	8-6-01 10:07 am	200 ft.	3 / 3	3 / 2	3 / 3
		100 ft.	5 / 4	4 / 4	5 / 4
N I S	Date,Time	300 ft.	2 / 2	2 / 1	2 / 2
	8-7-01 9:45	200 ft.	4 / 4	3 / 2	4 / 3
		100 ft.	5 / 5	4 / 4	5 / 5
N I S	Date,Time	300 ft.	1 / 1	1 / 1	1 / 1
	8-7-01 10:15am	200 ft.	2 / 2	2 / 1	2 / 2
		100 ft.	4 / 4	2 / 3	3 / 4

P.5
Gr 2

Name: Gary Carroll Age: 18

Circle Evaluation vehicle Number: A, B, (C), D Circle Sex: (M) F

Do you wear corrective lens? Yes (No)

Have you had eye exam in the last 2 years? Yes (No)

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	3 / 4	2 / 3	3 / 4
	8-6-01	200 ft.	4 / 4	3 / 3	4 / 4
	1:45 PM	100 ft.	4 / 4	4 / 4	4 / 4
E ← W	Date,Time	300 ft.	3 / 3	3 / 3	4 / 4
	8-6-01	200 ft.	4 / 4	4 / 4	4 / 4
	2:00 PM	100 ft.	4 / 4	4 / 4	4 / 4
N ↑ S	Date,Time	300 ft.	3 / 3	3 / 3	3 / 4
	8/7-01	200 ft.	4 / 4	3 / 3	4 / 4
	1:35 pm	100 ft.	4 / 4	4 / 4	4 / 4
N ↓ S	Date,Time	300 ft.	3 / 3	3 / 3	4 / 4
	8-7-01	200 ft.	4 / 3	3 / 3	4 / 4
	2:25 PM	100 ft.	4 / 4	3 / 3	4 / 4

P. 6

Gr 2

Name: RAY SEPPALA Age: 70

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	3 / 4	3 / 3	3 / 4
	8-6-01 1:45pm	200 ft.	4 / 5	4 / 4	4 / 5
		100 ft.	5 / 5	5 / 5	5 / 5
E ← W	Date,Time	300 ft.	3 / 3	3 / 3	3 / 3
	8-6-01 2:10pm	200 ft.	5 / 4	4 / 4	4 / 4
		100 ft.	5 / 5	5 / 5	5 / 5
N ↓ S	Date,Time	300 ft.	3 / 3	3 difficult to see / 3	3 / 3
	8-7-01 2:30pm	200 ft.	4 / 4	3 / 3	4 / 4
		100 ft.	5 / 5	4 / 4	5 / 5
N ↑ S	Date,Time	300 ft.	3 / 3	3 / 3	3 / 3
	8-7-01 1:45pm	200 ft.	4 / 4	3 / 3	4 / 4
		100 ft.	5 / 5	5 / 5	5 / 5

P. 7
Gr 1

Name: Walter Ballesteros Age: 35

Circle Evaluation vehicle Number: (A) B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	4 / 4	3 / 3	3 / 3
	8/6	200 ft.	4 / 4	3 / 2	4 / 3
	1:38pm / 1:45	100 ft.	4 / 5	4 / 3	4 / 4
E ← W	Date,Time	300 ft.	4 / 3	2 / 1	2 / 2
	8/6	200 ft.	4 / 3	2 / 2	3 / 3
	2:00pm / 2:10	100 ft.	4 / 4	2 / 2	4 / 4
N I S	Date,Time	300 ft.	[redacted] 2 / 2	1 / 1	2 / 2
	8/7/01	200 ft.	[redacted] 3 / 3	2 / 2	3 / 3
	[redacted] 2:25 / 2:39	100 ft.	[redacted] 4 / 4	3 / 3	4 / 5
N I S	Date,Time	300 ft.	3 / 3	1 / 1	2 / 2
	8/7/01	200 ft.	4 / 4	2 / 2	3 / 3
	1:36 / 1:45	100 ft.	4 4	3 2	4 4

P.8

Gr1

Name: George J. Gruber Age: 62

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	4 / 4	5 / 4	4 / 5
	8.6	200 ft.	5 / 5	5 / 4	4 / 5-
	13:40~	100 ft.	5 / 5	5 / 5	4 / 5-
E ← W	Date,Time	300 ft.	4 / 4	4 / 4	4 / 5-
	8.6	200 ft.	5 / 5	4 / 4	5 / 5
	14:00~	100 ft.	5 / 5	5 / 5	5 / 5-
N I S	Date,Time	300 ft.	4 / 4	4 / 4	4 / 4
	8/7	200 ft.	5 / 5	5 / 5	5 / 5
	14:30	100 ft.	5 / 5	5 / 5	5 / 5
N I S	Date,Time	300 ft.	4 / 4	4 / 4	4 / 4
	8/7	200 ft.	5 / 5	5 / 5	5 / 5
	13:40	100 ft.	5 / 5	5 / 5	5 / 5

P.9
Gr.3

Name: Shirley Cooley Age: 67

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: M (F)

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	2 / 2	2 / 1	2 / 2
	8-6-01	200 ft.	4 / 2	2 / 2	4 / 3
	3:00pm	100 ft.	5 / 3	5 / 3	5 / 4
E ← W	Date,Time	300 ft.	2 / 2	1 / 1	2 / 1
	8-6-01	200 ft.	4 / 4	2 / 3	3 / 4
	3:20pm	100 ft.	5 / 5	4 / 4	5 / 5
N I S	Date,Time	300 ft.	2 / 1	1 / 1	1 / 1
	8-7-01	200 ft.	3 / 3	3 / 3	4 / 3
	3:00pm	100 ft.	5 / 5	5 / 5	5 / 5
N I S	Date,Time	300 ft.	1 / 1	1 / 1	1 / 1
	8-7-01	200 ft.	3 / 3	2 / 2	3 / 3
	3:17pm	100 ft.	5 / 5	4 / 4	5 / 5

P10

Gr3

Name: Pat Park Age: 64

Circle Evaluation vehicle Number: A, B, (C), D Circle Sex: M (F)

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	5 / 4	3 / 3	3 / 3
	8-6-01	200 ft.	5 / 4	3 / 3	3 / 4
	2:45PM	100 ft.	5 / 5	3 / 4	4 / 4
E ← W	Date,Time	300 ft.	3 / 3	2 / 1	3 / 3
	8-6-01	200 ft.	3 / 4	3 / 2	3 / 4
	3:10 pm	100 ft.	4 / 5	3 / 3	4 / 5
N I S	Date,Time	300 ft.	2 / 1	1 / 1	2 / 2
	8-7-01	200 ft.	3 / 1	1 / 1	3 / 3
	2:55PM	100 ft.	5 / 3	3 / 2	4 / 4
N I S	Date,Time	300 ft.	2 / 2	1 / 1	3 / 2
	8-7-01	200 ft.	3 / 2	2 / 1	4 / 3
	3:10 PM	100 ft.	4 / 4	3 / 2	4 / 4

P11
Gr 3

Name: Celena Eddington Age: 24

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: M (F)

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time	300 ft.	3 / 3	2 / 2	2 / 2
	14:50	200 ft.	4 / 3	2 / 2	3 / 2
	8.6	100 ft.	4 / 4	3 / 3	4 / 3
E ← W	Date,Time	300 ft.	2 / 3	2 / 2	2 / 2
	15:35	200 ft.	3 / 3	2 / 2	3 / 3
	8.6	100 ft.	4 / 4	3 / 3	4 / 4
N I S	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	15:00	200 ft.	3 / 3	2 / 2	3 / 2
	8.6	100 ft.	4 / 4	3 / 3	4 / 4
N I S	Date,Time	300 ft.	2 / 2	1 / 1	2 / 2
	15:30	200 ft.	3 / 3	2 / 2	2 / 3
	8.6	100 ft.	4 / 4	3 / 3	3 / 4

P12

Grd

Name: Eric Stec Age: 31 Auto. Technician

Circle Evaluation vehicle Number: (A), B, C, D Circle Sex: (M) F

Do you wear corrective lens? Yes (No)

Have you had eye exam in the last 2 years? Yes (No)

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1	Vehicle #2	Vehicle #3
E → W	Date,Time 8/6/01 2:45/2:55	300 ft.	2 / 2	1 / 1	2 / 2
		200 ft.	3 / 3	2 / 2	3 / 3
		100 ft.	4 / 4	3 / 3	4 / 4
E ← W	Date,Time 8/6 3:12/3:22	300 ft.	3 / 2	2 / 1	2 / 2
		200 ft.	3 / 3	2 / 2	3 / 3
		100 ft.	4 / 4	3 / 3	3 / 3
N ↑ S	Date,Time 8/7/01 3:24/3:27	300 ft.	2 / 2	1 / 1	2 / 2
		200 ft.	3 / 3	1 / 1	3 / 3
		100 ft.	4 / 4	3 / 3	4 / 4
N ↓ S	Date,Time 8/7/01 3:00/3:05	300 ft.	3 / 2	1 / 1	2 / 2
		200 ft.	3 / 3	1 / 1	3 / 3
		100 ft.	4 4	3 3	4 / 4

P13
Gr4

Name: NIKIE MARTIN Age: 56

RETIRED IRS SUPERVISORY CUSTOMER SERVIC. REP

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: M (F)

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time 8/8/01 1:05pm – 1:15pm	300 ft.	3 / 3	3 / 3	4 / 3
		200 ft.	4 / 4	3 / 3	4 / 3
		100 ft.	5 / 5	4 / 4	5 / 5
E ← W	Date,Time 8/8/01 2:07pm – 2:16pm	300 ft.	2 / 2	2 / 2	2 / 2
		200 ft.	3 / 3	3 / 2	3 / 3
		100 ft.	4 / 5	3 / 3	4 / 4
N ↓ S	Date,Time 8/8/01	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/
N ↑ S	Date,Time 8/8/01 2:39pm – 2:42pm	300 ft.	2 / 2	2 / 2	3 / 2
		200 ft.	3 / 3	3 / 2	3 / 3
		100 ft.	4 / 5	3 / 3	5 / 5

Group A

P14
Gr 4 Name: DARCY GREENE Age: 32

Circle Evaluation vehicle Number: A, B (C) D Circle Sex: M (F)

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time	300 ft.	3 / ~~2~~	2 / 2	3 / 2
	8-8-01	200 ft.	3 / 3	2 / 2	3 / 3
	1:05 p.m.	100 ft.	4 / 3	3 / 2	4 / 3
E ← W	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	8-8-01	200 ft.	3 / 3	2 / 2	3 / 3
	2:05 pm	100 ft.	4 / 4	3 / 3	4 / 4
N ↑ S	Date,Time	300 ft.	2 / 2	2 / 2	3 / 3
	8-8-01	200 ft.	3 / 3	2 / 3	3 / 3
		100 ft.	4 / 4	3 / 3	4 / 4
N ↓ S	Date,Time	300 ft.	/	/	/
	8-8-01	200 ft.	/	/	/
		100 ft.	/	/	/

P15
Gr4

ELECTRONICS TE

Name: John Woods Age: 42

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #1 3	Vehicle #2	Vehicle #3 1
E → W	Date,Time 8/9 13:10~	300 ft.	2 / 1	2 / 1	3 / 2
		200 ft.	4 / 2	2 / 2	3 / 3
		100 ft.	4 / 3	3 / 2	4 / 4
E ← W	Date,Time 14:10 8/9	300 ft.	1 / 1	1 / 1	1 / 2
		200 ft.	2 / 2	1 / 2	2 / 2
		100 ft.	3 / 3	2 / 2	3 / 4
N ↑ S	Date,Time 14:35 8/9	300 ft.	1 / 1	1 / 1	1 / 2
		200 ft.	1 / 2	2 / 1	2 / 3
		100 ft.	3 / 3	3 / 3	4 / 4
N ↓ S	Date,Time	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/

Formerly Driving Inst

P16

Gr4

Name: Donald L. Cline Age: 59

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No SOMETIMES

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	8-8-01	200 ft.	3 / 3	2 / 2	2 / 3
	1:10pm	100 ft.	4 / 3	2 / 2	3 / 3
E ← W	Date,Time	300 ft.	1 / 1	1 / 1	1 / 1
	8-8-01	200 ft.	2 / 1	1 / 1	2 / 2
	2:10pm	100 ft.	2 / 2	1 / 1	2 / 2
N ↓ S	Date,Time	300 ft.	/	/	/
	8-8-01	200 ft.	/	/	/
	2:37	100 ft.	/	/	/
N ↑ S	Date,Time	300 ft.	1 / 1	1 / 1	2 / 2
	8-8-01	200 ft.	1 / 1	1 / 1	2 / 2
	2:37	100 ft.	2 / 2	1 / 2	3 / 2

P17

Gr5

FIANANCIAL SERVICES (RETIRED)

Name: ROBERT STORK Age: 59

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: M F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time 8/8/01 1:27pm 1:35pm	300 ft.	3 / 3	2 / 2	2 / 3
		200 ft.	4 / 3	3 / 3	3 / 4
		100 ft.	5 / 4	4 / 4	4 / 5
E ← W	Date,Time 8/8/01 1:48pm 1:57pm	300 ft.	2 / 2	2 / 2	2 / 3
		200 ft.	3 / 2	3 / 3	3 / 4
		100 ft.	4 / 3	3 / 4	4 / 4
N I S	Date,Time 8/8/01	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/
N I S	Date,Time 8/8/01 2:51pm 2:57pm	300 ft.	2 / 2	1 / 2	3 / 2
		200 ft.	3 / 3	2 / 3	4 / 3
		100 ft.	4 / 3	3 / 4	5 / 4

P18

GT5

TRUCK DRIVE

Name: James Hilliker Age: 32

Circle Evaluation vehicle Number: A, B, (C), D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time	300 ft.	2 / 2	2 / 2	3 / 2
	8-8-01	200 ft.	4 / 3	4 / 3	4 / 4
	1:25 PM	100 ft.	5 / 4	4 / 4	5 / 5
E ← W	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	8-8-01	200 ft.	3 / 3	3 / 3	3 / 3
	1:50 PM	100 ft.	5 / 5	4 / 4	5 / 5
N ↑ S	Date,Time	300 ft.	1 / 1	1 / 2	2 / 2
	8-8-01	200 ft.	2 / 3	2 / 3	4 / 3
	2:50 PM	100 ft.	4 / 5	4 / 4	5 / 5
N ↓ S	Date,Time	300 ft.	/	/	/
	8-8-01	200 ft.	/	/	/
		100 ft.	/	/	/

P19

Gr5

GROUP B

Name: TAMARA THOMAS Age: 43

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: M (F)

Do you wear corrective lens? Yes (No)

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time	300 ft.	3 / 2	3 / 3	4 / 3
	13:30	200 ft.	4 / 4	4 / 3	5 / 4
	8.9	100 ft.	4 / 4	5 / 4	5 / 5
E ← W	Date,Time	300 ft.	2 / 2	2 / 2	3 / 3
	13:50~	200 ft.	3 / 3	3 / 2	4 / 4
	8.9	100 ft.	4 / 4	3 / 3	5 / 5
NIS	Date,Time	300 ft.	/	/	/
	14:50~	200 ft.	/	/	/
	8.9	100 ft.	/	/	/
NIS	Date,Time	300 ft.	2 / 2	2 / 2	3 / 3
	14:50	200 ft.	3 / 2	2 / 3	3 / 4
	8.9	100 ft.	4 / 3	3 / 4	4 / 5

N20
Gr 5

Retired m.
OSHA Cons.

Name: Ken Martin Age: 60

Circle Evaluation vehicle Number: A, B, C, D Circle Sex: (M) F

Do you wear corrective lens? (Yes) No

Have you had eye exam in the last 2 years? (Yes) No

General information & Rating scale

The following evaluation will be used to gather customer feedback information on a headlamp system under development for use on light duty vehicles. Your ratings will be combined with that of the other participants to give Toyota customer feedback in this developmental headlamp system. The rating scale you are requested to use is below;

Rating Scale	
5	The visibility of the turn signal is very good
4	The visibility of the turn signal is good.
3	The visibility of the turn signal is fair.
2	The visibility of the turn signal is poor.
1	The visibility of the turn signal is very poor.

Please complete the following sections based on your personal experience with each vehicle to be rated.

Evaluation Instructions

During this evaluation, you will rate the turn signal visibility of 3 vehicles when you are at three fixed distances away from each vehicle you see. Please don't wear any sunglasses during the evaluation or use the sunvisor (sunvisor must remain up). The navigator next to you will tell you where to stop. For each distance, rate the visibility of the turn signal based on the rating scale listed above. Please complete your ratings in the chart below.

			Vehicle #3	Vehicle #2	Vehicle #1
E → W	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	8-8-01 1:30pm	200 ft.	2 / 2	2 / 2	3 / 3
		100 ft.	3 / 3	3 / 2	4 / 3
E ← W	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	8-8-01 1:53	200 ft.	2 / 2	2 / 2	3 / 2
		100 ft.	3 / 3	3 / 3	3 / 3
N ↓ S	Date,Time	300 ft.	/	/	/
		200 ft.	/	/	/
		100 ft.	/	/	/
N ↑ S	Date,Time	300 ft.	2 / 2	2 / 2	2 / 2
	8-8-01 2:52pm	200 ft.	2 / 2	2 / 2	3 / 3
		100 ft.	3 / 3	3 / 3	3 / 3

①: Direction of Observation Vehicle
②: Evaluation Vehicle
③: Observation Distance
④: Repetition
⑤: Sun Position
(F: Forward B: Back R: Right L: Left)

Panel No.

					Gr1					Gr2					Gr3					Gr4					Gr5			
①	②	③	④	⑤	P1	P2	P3	P4	⑤	P5	P6	P7	P8	⑤	P9	P10	P11	P12	⑤	P13	P14	P15	P16	⑤	P17	P18	P19	P20
E→W	#1	300ft	1	F・R	3	4	3	3	B・R	3	3	4	4	B・R	2	5	3	2	B・R	4	3	3	2	B・R	2	3	4	2
			2		3	4	3	4		4	4	4	4		2	4	3	2		3	2	2	2		3	2	3	2
		200ft	1		4	5	4	4		4	4	4	5		4	5	4	3		4	3	3	2		3	4	5	3
			2		3	5	3	4		4	5	4	5		2	4	3	3		3	3	3	3		4	4	4	3
		100ft	1		5	5	4	5		4	5	4	5		5	5	4	4		5	4	4	3		4	5	5	4
			2		5	5	4	5		4	5	5	5		3	5	4	4		5	3	4	3		5	5	5	3
	#3	300ft	1		3	3	2	2		3	3	3	4		2	3	2	2		3	3	2	2		3	2	3	2
			2		3	3	2	2		4	4	3	5		2	3	2	2		3	2	1	2		3	2	2	2
		200ft	1		4	3	3	3		4	4	4	4		4	3	3	3		4	3	4	3		4	4	4	2
			2		5	3	3	3		4	5	3	5		3	4	2	3		4	3	2	3		3	3	4	2
		100ft	1		5	4	3	5		4	5	4	4		5	4	4	4		5	4	4	4		5	5	4	3
			2		5	4	3	5		4	5	4	5		4	4	3	4		5	3	3	3		4	4	4	3
	#2	300ft	1		1	3	2	2		2	3	3	5		2	3	2	1		3	2	2	2		2	2	3	2
			2		1	3	1	2		3	3	3	4		1	3	2	1		3	2	1	2		2	2	3	2
		200ft	1		2	3	2	3		3	4	3	5		2	3	2	2		3	2	2	2		3	4	4	2
			2		3	3	2	2		3	4	2	4		2	3	2	2		3	2	2	2		3	3	3	2
		100ft	1		4	3	2	3		4	5	4	5		5	3	3	3		4	3	3	2		4	4	5	3
			2		5	3	2	3		4	5	3	5		3	4	3	3		4	2	2	2		4	4	4	2
W→E	#1	300ft	1	B・L	2	3	2	2	F・L	3	3	4	4	F・L	2	3	2	3	F・L	2	2	1	1	F・L	2	2	3	2
			2		3	4	2	2		3	3	3	4		2	3	3	2		2	2	2	1		3	2	3	2
		200ft	1		4	4	2	3		4	5	4	5		4	3	3	3		3	3	2	2		3	3	4	3
			2		4	4	3	3		4	4	3	5		4	4	3	3		3	3	2	2		4	3	4	2
		100ft	1		5	5	3	5		4	5	4	5		5	4	4	4		4	4	3	2		4	5	5	3
			2		5	5	4	4		4	5	4	5		5	5	4	4		4	4	4	2		4	5	5	3
	#3	300ft	1		2	3	2	1		4	3	2	4		2	3	2	2		2	2	1	1		2	2	2	2
			2		3	3	2	2		4	3	2	5		1	3	2	2		2	2	1	1		2	2	2	2
		200ft	1		5	4	2	3		4	4	3	5		3	3	3	3		3	3	2	2		3	3	3	2
			2		4	3	3	3		4	4	3	5		4	4	3	3		3	3	2	1		2	3	3	2
		100ft	1		5	4	4	5		4	5	4	5		5	4	4	3		4	4	3	2		4	5	4	3
			2		5	4	4	4		4	5	4	5		5	5	4	3		5	4	3	2		3	5	4	3
	#2	300ft	1		2	3	1	1		3	3	2	4		1	2	2	2		2	2	1	1		2	2	2	2
			2		2	3	1	1		3	3	1	4		1	1	2	1		2	2	1	1		2	2	2	2
		200ft	1		4	3	2	3		4	4	2	4		2	3	2	2		3	2	1	1		3	3	3	2
			2		3	3	2	2		4	4	2	4		3	2	2	2		2	2	2	1		3	3	2	2
		100ft	1		5	3	3	4		4	5	2	5		4	3	3	3		3	3	2	1		3	4	3	3
			2		5	3	3	4		4	5	2	5		4	3	3	3		3	3	2	1		4	4	3	3

①: Direction of Observation Vehicle
②: Evaluation Vehicle
③: Observation Distance
④: Repetition
⑤: Sun Position
(F: Forward B: Back R: Right L: Left)

Panel No.

①	②	③	④	⑤	Gr1 P1	P2	P3	P4	⑤	Gr2 P5	P6	P7	P8	⑤	Gr3 P9	P10	P11	P12	⑤	Gr4 P13	P14	P15	P16	⑤	Gr5 P17	P18	P19	P20
N→S	#1	300ft	1	B・R	3	4	3	2	cloudy	3	3	2	4	cloudy	2	2	2	3									
			2		3	4	3	2		3	3	2	4		1	1	2	2									
		200ft	1		5	4	3	4		4	4	3	5		3	3	3	3									
			2		4	4	4	3		3	4	3	5		3	1	3	3									
		100ft	1		5	5	4	5		4	5	4	5		5	5	4	4									
			2		5	5	4	5		4	5	4	5		5	3	4	4									
	#3	300ft	1		3	4	3	2		4	3	2	4		1	2	2	2									
			2		3	3	2	2		4	3	2	4		1	2	2	2									
		200ft	1		4	4	4	4		4	4	3	5		4	3	3	3									
			2		4	4	3	3		4	4	3	5		3	3	2	3									
		100ft	1		5	5	4	5		4	5	4	5		5	4	4	4									
			2		5	5	4	5		4	5	5	5		5	4	4	4									
	#2	300ft	1		2	3	2	2		3	3	1	4		1	1	2	1									
			2		2	3	2	1		3	3	1	4		1	1	2	1									
		200ft	1		3	3	3	3		3	3	2	5		3	1	2	1									
			2		3	3	3	2		3	3	2	5		3	1	2	1									
		100ft	1		4	4	4	4		3	4	3	5		5	3	3	3									
			2		4	4	3	4		3	4	3	5		5	2	3	3									
S→N	#1	300ft	1	F・L	2	3	2	1	cloudy	3	3	3	4	cloudy	1	2	2	2	cloudy	3	3	1	2	cloudy	3	2	3	2
			2		3	3	2	1		3	3	3	4		1	2	2	2		2	3	2	2		2	2	3	2
		200ft	1		4	3	3	2		4	4	4	5		3	3	3	3		3	3	2	2		4	4	3	3
			2		4	4	2	2		4	4	4	5		3	2	3	3		3	3	3	2		3	3	4	3
		100ft	1		5	4	4	4		4	5	4	5		5	4	4	4		5	4	4	3		5	5	4	3
			2		5	4	3	4		4	5	4	5		5	4	4	4		5	4	4	2		4	5	5	3
	#3	300ft	1		3	4	3	1		3	3	2	4		1	3	2	2		2	2	1	1		2	1	2	2
			2		2	3	2	1		4	3	2	4		1	2	2	2		2	2	1	1		2	1	2	2
		200ft	1		4	4	3	2		4	4	3	5		3	4	2	3		3	3	1	1		3	2	3	2
			2		4	4	2	2		4	4	3	5		3	3	3	3		3	3	2	1		3	3	2	2
		100ft	1		5	5	4	3		4	5	4	5		5	4	3	4		4	4	3	2		4	4	4	3
			2		5	5	3	4		4	5	4	5		5	4	4	4		5	4	3	2		3	5	3	3
	#2	300ft	1		1	2	2	1		3	3	1	4		1	1	1	1		2	2	1	1		1	1	2	2
			2		2	2	2	1		3	3	1	4		1	1	1	1		2	2	1	1		2	2	2	2
		200ft	1		3	2	2	2		3	3	2	5		2	2	2	1		3	2	2	1		2	2	2	2
			2		3	2	2	1		3	3	2	5		2	1	2	1		2	3	1	1		3	3	3	2
		100ft	1		4	3	3	2		4	5	3	5		4	3	3	3		3	3	3	1		3	4	3	3
			2		5	3	3	3		4	5	2	5		4	2	3	3		3	3	3	2		4	4	4	3

Supplement II : Investigation of the influence of the eye point height

To consider the selection of the observation vehicle, we checked influence of the eye point height on the visibility of the lamps by the bench test.

a) Evaluation condition

- Test date; Tuesday, July 10. 2001
- The evaluation was run at the Haibara Visibility Test Road of Koito Manufacturing Co. Ltd.
- The sun position was set to the front of the lamp.
- The observation distances were 200 feet and 300 feet.
- Nine people who were in thirties, forties, fifties participated in those who evaluated six included the person related to the lamp
- Eye point height
  1150 mm : the eye point height of a passenger car
  2350 mm : the eye point height of a heavy-duty truck.
- Celica's lamp was used for the evaluation.

b) Procedure

- The lamp height and a distance between right and left lamps were set to the arrangement of Celica on the bench stand.
- DRL of 5880 cd was lighted on, and the front turn signal lamp 580 cd was blinked on.
- Observers sat on the chairs that were set to make the observer's eye point height to 1150 mm at 200 feet away and evaluated the visibility of the turn signal lamp.
- Then observers stood up on the stand that were adjusted to make the observer's eye point height to 2350 mm at 200 feet and evaluate the visibility of the turn signal lamp.
- Then observers moved to the place 300 feet away from the turn signal lamp and repeated the same procedure.

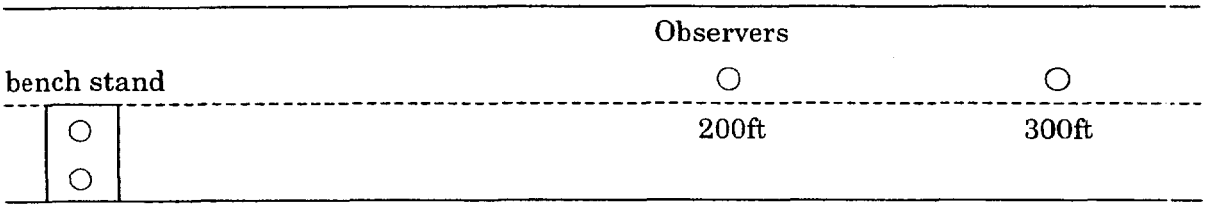


Figure II-1

c) Result

The result is shown in Figure II -2. There was no difference in the evaluation of the visibility in the two eye point heights.

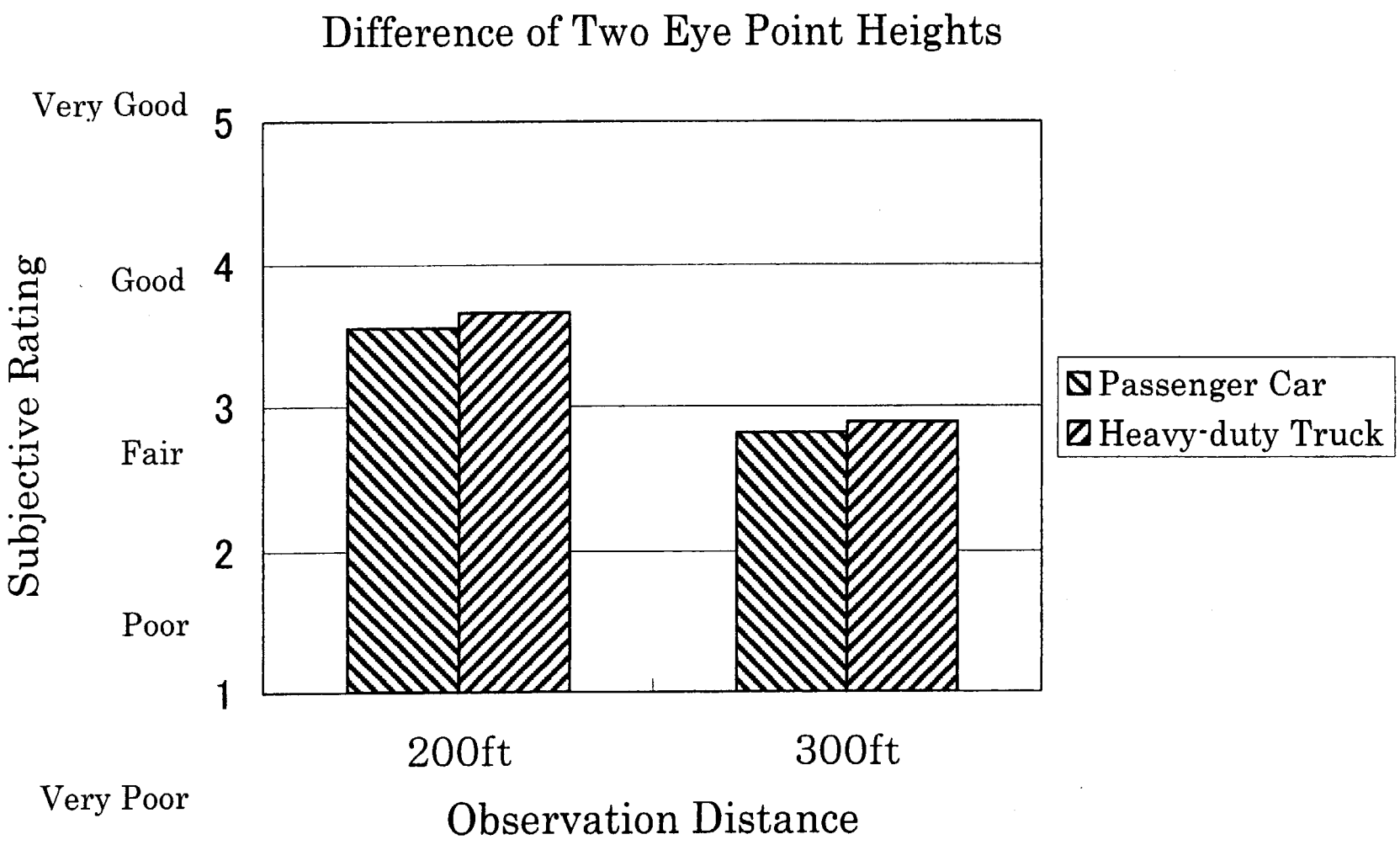

Difference of Two Eye Point Heights
Very Good
5
Good
4
3
Fair
2
Poor
1
Very Poor
Subjective Rating
200ft
300ft
Observation Distance
Passenger Car
Heavy-duty Truck

Figure II－2

Supplement III : Investigation of turn signal lamp recognizing distance.

The distance that the driver could recognize the blinking of the turn signal lamp of Celica that stopped in an opposite lane was investigated.

a) Evaluation condition

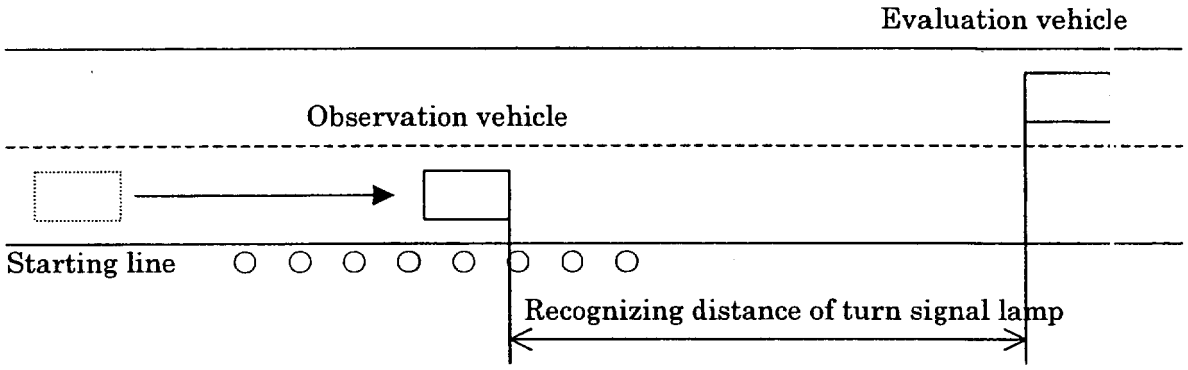
- Test date; Friday, July 27 and Monday July 30. 2001,
- The test was run at Toyota Technical Center Proving Ground in Japan.
- The sun position was chosen to be two places (forward and back) to the turn signal lamp.
- Nineteen observers were chosen among the Toyota personnel whose job did not involved vehicle lighting. Nine of them were men of 45 years old or older, Six of them were women, and the rest were men in twenties and thirties.
- The observation vehicle used was Toyota Camry (Left hand drive).
- Evaluation vehicle(Show tableIII-1)

TOYOTA CELICA -JTDDY32TX20047820 -ZZT231L-BLPVFA -04/2001	Aiming of the headlamp was correctly adjusted, and the voltage was adjusted to the value indicated in a right column	DRL	6.4V
		Turn signal lamp	12.8V

TableIII-1

b) Procedure

- The observation vehicle was stopped at the starting line 600ft away from the evaluation vehicle.
- The evaluation vehicle blinked the turn signal lamp.
- The observer started the vehicle and maintained the vehicle speed at about 40 km/h (25mph).
- When the observer recognized the blinking of the turn signal lamp, the observer informed to the person in the passenger seat.
- The person in the passenger seat judged the distance from the observation vehicle by the indication board and recorded the distance.



FigureIII-1

c) Result

The result is shown in Figure Ⅲ-2. The blinking of the turn signal lamp could be recognized at the distance of 330 feet or more in both sun positions.

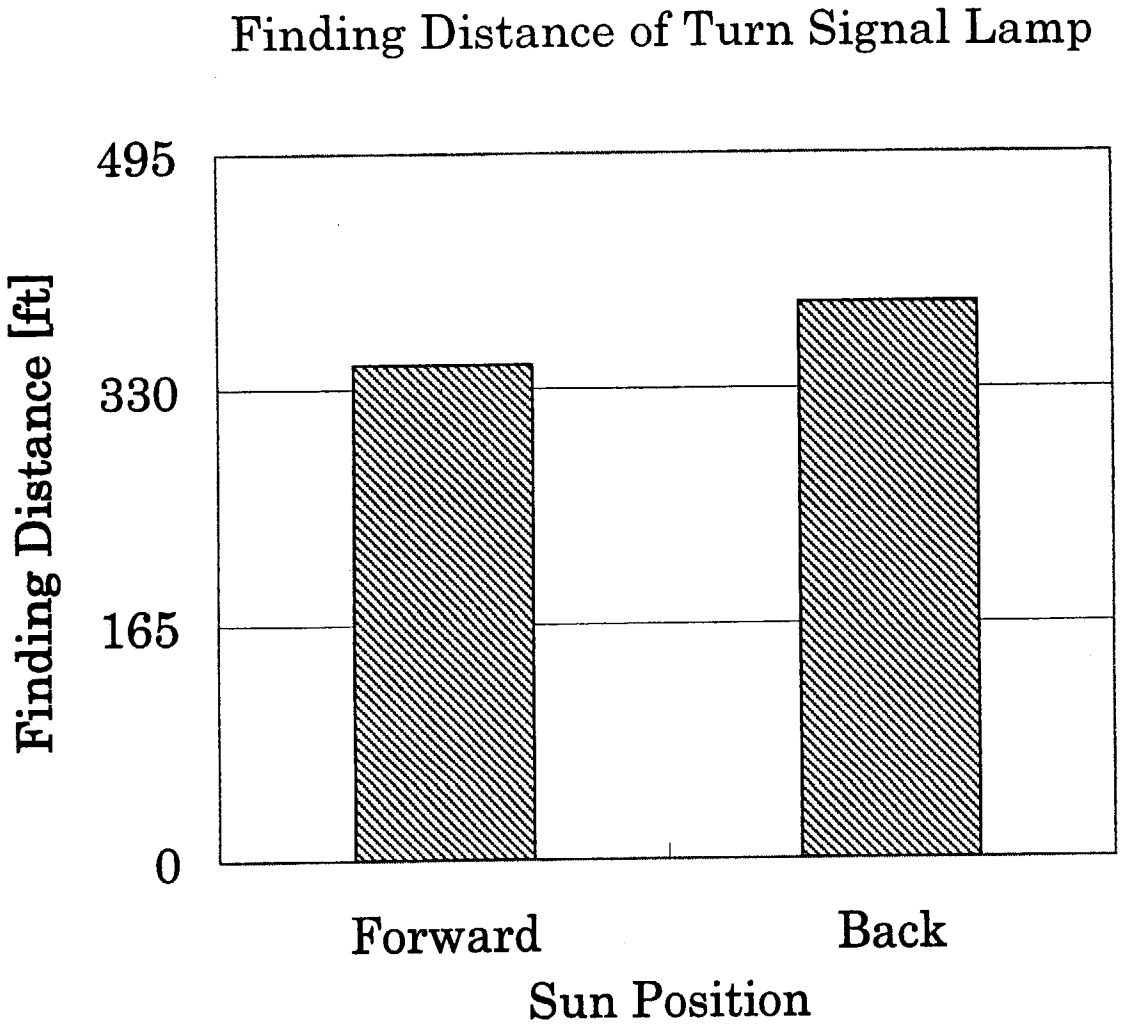

Finding Distance of Turn Signal Lamp
495
330
165
0
Finding Distance [ft]
Forward
Back
Sun Position

Figure Ⅲ－2